HELSINKI SCHOOL OF ECONOMICS (HSE)
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PAYOUT FEATURES OF CAPITAL GUARANTEED STRUCTURED RETAIL NOTES SOLD IN FINLAND 2002 - 2007

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ABSTRACT
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Objectives The study examines the different payout features of capital guaranteed structured retail notes sold in Finland 2002-2007. The main contribution is the in-depth analysis of distinct terms and payout features utilized. To my best knowledge, no such a research has conducted in Finnish markets before. The goal is also sort out if there are statistically significant differences between distributors notes' return calculation features. Recent studies show that the products with embedded exotic options are subject to even higher premiums compared to common classic products. Therefore, the object is also to find out if there are differences between the payout complexities of distributed retail notes.

Data The data used in the study consists of 343 capital guaranteed structured retail note issuances' terms and agreements sheets. The issuances occurred between 2002 and 2007. The sheets are collected partly from the websites of the issuers or distributors and partly from the prospectus database of the Finnish Financial Supervision Authority (FSA). They are collected during autumn 2007.

Results The main results of the study include that the hypothesis, "There are differences between distributors utilizing more or less complex calculation features than others on the average" is statistically significant for the observed maximum and minimum proportions of distributors' complex notes. The notes distributed by FIM Group utilize proportionally the most, 89% of sold notes, complex payout features. In contrast, United Bankers uses proportionally the least complex notes, 17% of sold notes. The average of distributed complex notes is 56%.

The results show that equity related underlying assets cover the majority, 77% of issuances. Mixed assets-group is the second popular with 8% of issues. It consists of underlying assets from at least two different classes. The third often-used class is interest rate structures followed by currencies and commodities. Also complex predetermined strategies, credit products and hedge funds are available with capital protection for retail investors through structured notes.

Keywords Structured retail products, payout features, embedded options

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PIENSIJOITTAJILLE SUOMESSA VUOSINA 2002-2007 MYYTYJEN STRUKTUROITUJEN PÄÄOMASUOJATTUJEN SIJOITUSLAINOJEN ERILAISIA TUOTONLASKENTATAPOJA

Tavoitteet Tämän tutkimuksen tavoitteena on selvittää millaisia tuotonlaskentatapoja on käytetty vuosina 2002-2007 liikkeeseen lasketuissa strukturoiduissa pääomasuojatuissa sijoituslainoissa. Tutkimuksen tärkein panos on syvällinen analyysi erilaisista käytetyistä tuotonlaskentatavoista ja –ehdoista. Parhaimman tietoni mukaan samanlaista tutkimusta ei ole aiemmin tehty Suomen markkinoilla. Tutkimuksen tavoitteena on myös selvittää onko eri sijoituslainamyyjien lainojen tuotonlaskentatavoissa tilastollisesti merkitseviä eroja. Viimeaikaiset tutkimukset osoittavat, että strukturoidut tuotteeet, joissa on eksoottisia optioita, voivat sisältää jopa suurempia preemioita kuin perinteisemmät strukturoidut tuotteet. Tästä syystä tutukimuksen tavoitteena on myös selvittää onko tuotonlaskennan monimutkaisuudessa eroja liikkeeseen laskettujen sijoituslainojen tuotonlaskennan suhteen.

Data Tutkimuksessa käytetty data koostuu 343 pääomasuojatusta yksityishenkilöille myydystä sijoituslainan ehdosta. Liikkeeseen laskut ovat tapahtuneet vuosina 2002-2007. Ehdot on kerätty osittain liikkeeseenlaskijoiden tai välittäjien nettisivuilta ja osittain Suomen Rahoitustarkastuksen esiterekisteristä. Ehdot on kerätty syksyllä 2007.

Tulokset Yksi päätuloksista on, että hypoteesi, "Sijoituslainojen välittäjät eroavat tilastollisesti merkitsevästi toisistaan käyttämiensä tuotonlaskentatapojen monimutkaisuuden mukaan verrattuna muiden välittäjien keskiarvoihin" on tilastollisesti merkitsevä välittäjien havaituille monimutkaisten lainojen maksimi ja minimi suhdeluvuille. FIM-yhtiöt käyttää suhteellisesti eniten, 89%:ssa myydyistä sijoituslainoistaan monimutkaisia tuotonlaskentatapoja. Sitä vastoin, United Bankers käyttää suhteellisesti vähiten, vain 17%:ssa myydyistä lainoistaan, monimutkaisia tuotonlaskentatapoja. Keskiarvo tuotonlaskennan monimutkaisuudelle myytyjen lainojen määrän osalta on 56%.

Osakkeet ja osakeindeksit muodostavat 77% myytyjen sijoituslainojen tuotonlaskennan kohteista. Sekalaiset-ryhmä on toisena sisältäen vähintään kahta eri omaisuuslajia. Kolmantena tulevat korkostruktuurit ennen valuutat ja hyödykkeet-ryhmiä. Myös monimutkaiset ennalta määrätyt strategiat ja vipurahastot ovat mahdollisia sijoituskohteita strukturoitujen lainojen avulla myös piensijoittajille pääomaturvattujen lainojen avulla.

Avainsanat Pääomasuojattu, sijoituslaina, strukturoitu laina, tuotonlaskentapa

Table of Contents

List of Figures

List of Tables

List of Equations

1. Introduction

The issuances of structured retail products have grown rapidly in Finland in recent years. This form of investment creates a possibility for an individual investor to invest in areas which otherwise would be hard to reach, such as commodities, currencies, credits and exotic stock markets. The most popular structured retail product is a capital protected index-linked note. A capital protected index-linked note typically consists of two components, a zero coupon note and an option. The zero coupon note guarantees that the investor receives at least the invested nominal amount on the maturity date. The option, usually call option, is linked to wished underlying e.g. indexes, stocks or currencies of many different kinds.

The majority of retail issues are capital protected and that makes them an attractive alternative for mutual funds or direct stock investments. The values of stocks and mutual funds can decrease below the purchase price but capital protection guarantees the nominal value for investor on a maturity date. The return depends on the development of the underlying assets.

The sales volume of structured products in Finland has been more or less conjectural until Finnish Structured Products Association (SSS ry) sorted out the first time the size of the market in 2005. According to SSS the total sales volume of structured products, as shown in Table 1, is 2.4 billion euro in 2006, an increase of 44 % from the previous year. The growth is most intense in publicly issued notes, resulting to an increase of almost 87 %. Statistics show that principal protection is highly demanded; these products stand for 83 % of all new issues in 2006.

Finnish structured products sales volumes 2006 & 2005

Sales volumes:	2006 (€) m	2005 (€) m	Change
Total Sales	2 426,8	1 690,2	43,6 %
(from which) Principal protected	2 004,5	1 379,2	45,3 %
According to structure:			
Publicly issued notes	1 270,7	680,9	86,6 %
Private issues	1 043,8	706,2	47,8 %
Deposits	112,3	303,1	-62,9 %
According to underlying:			
Equity products	1 440,5	899,7	60,1 %
Interest rates or credit products	699,9	567,3	23,4 %
Others	286,4	223,3	28,3 %

Suomen Strukturoidut Sijoitustuotteet ry. Figures are from the following members: Aktia, Evli, FIM, EFG Investment Bank, Handelsbanken, Nordea, OKO, Sampo, SEB, Ice Capital, Finactu and Ålandsbanken

Table 1. *The table exhibits the sales volumes of structured products in Finland in 2005 and 2006. Total sales increased 44% from year 2005 to 2006 totalling 2.4 billion euro in 2006. Principal protected structures consist 83% of total sales in 2006. The growth was most intense in publicly issued notes, almost 87%.*

1.1.Background and motivation for the study

The first structured note was issued in Finland in 1994. Structured products' market share of new investments was quite insignificant in early years. It started to increase strongly in the beginning of 21st century and, in 2006 total sales volume of structured products (€ 2427m) was more than net investments to equity funds (€ 2182m) on the same period (Suomen Sijoitusrahastoyhdistys ry, 2006). This huge sales growth of structured products, popularity among retail investors and remarkable amount of new capital invested explains much of the noise around them in public lately.

Before studying the diversified jungle of terms and conditions of structured retail products, it is valuable to take a look at the recent publicity and published articles of the subject.

The Finnish Financial Supervision Authority (FSA, Rata) has been quite active around the subject of index-linked notes in recent years. It has published four articles in last three years and the nuance of the articles seems to be somewhat critical and distrustful.

The FSA released an article "Greater complexity of return calculation impairs comparison of index-linked notes" on The FSA Newsline in September 2004. The article describes how the terms of index-linked notes have become more complex and investors must be to an increasing degree familiar with the behaviour of underlying assets in order to estimate the return expectations and favour of the terms and conditions of the notes. FSA also reviewed the return calculation terms for the notes issued over the years 2003-2004 in order to obtain a better understanding of the effect of restrictive terms on expected return. Their findings are, shortly, that relevance of the underlying assets has to be assessed, distribution of valuation dates deserves close attention, there is broad range of conditions governing return calculation and past performance is no guarantee of future performance.

The FSA published an article "Trend in index-linked notes towards offering a more comprehensive investment portfolio" in October 2005. It describes that the calculation of return is in transition, i.e. index-linked notes are increasingly diversified so that the underlying is composed of up to 3-5 different indexes. The article reminds that the marketing term "principal-protected", as evoking safety, is not problem-free. The nominal amount invested is subject to issuer risk (counterparty risk). In addition, the repayment of principal only comprises the nominal amount of the loan, not a possible premium paid. The article also points out that the rapid development of index-linked notes also poses a challenge and training requirements to the issuer sales personnel, not only to customers.

The latest FSA article is released in March 2007. It headlines: "Pricing of index-linked notes not sufficiently transparent". The article discloses that part of the fee charged from investors may have been embedded in the subscription price directly so that no specific information on it or its extent has been revealed to the investors. FSA points out that prior to subscription of index-linked notes investors should always be informed of the fact that there is a fee directly embedded in the subscription price and also the amount of the fee embedded. If the final amount of the fee cannot be precisely specified

in the marketing of the note, the marketing information could still provide a best estimate of the range within which the final fee is going to be found. The range should be estimated as precisely as possible, so that the investor can get a sufficiently accurate picture of the size of the fee. FSA says that the investor buys a combination product which value is the sum of values of both the note and the option. The fee is the part of the subscription price that represents the supplement on top of the sum total of the values of the note and the option. FSA understands that on the issuers' or distributors' point of view, there are naturally other costs as well, which are covered with the fees charged. FSA nevertheless emphasises that the transparency of fees is important when return calculation gets complicated. Complication adds investors' need for information, because comparison between notes and favour assessment has become considerably more challenging. Also index-linked notes have clearly become more and more an investment product to the general public. FSA tells that it has had a series of discussions with market participants on how fees of index-linked notes could become more transparent to investors. The discussions have brought to light that market participants partly have different views on the measures to be taken to improve the transparency. FSA ends the article to a comment that later year 2007 FSA will separately assess whether there is a need for uniform recommendations or interpretations. The assessment will also pay attention to market participants' possible own measures to improve transparency.

FSA's latest publication clearly unveils their dissatisfaction with the current market practices and the non-transparency of the costs embedded to index-linked notes. Since the supervisory authority stresses this emphatically about the current market practice, it would be a surprise if nothing changes.

Nonetheless, the Finnish FSA is not the sole supervisor reminding of the good market practices regarding structured products. At least the Swedish FSA (Finansinspektionen) and Netherlands Authority for the Financial Markets (AFM) have same kind of duties than Finnish FSA under way (Finansinspektionen 2005, 2006; AFM 2007).

A month after of the Finnish FSA's rumble, Taloussanomat (taloussanomat.fi, 2007) headlines that Nordea, one of the major issuer in Finland, reveals the costs of the index-linked notes. The article describes that Nordea is the first issuer to disclose the

embedded structured costs in Finland. According to article, Nordea calculates the embedded structured costs as a difference between the offer price (investors subscription price) and the hedging costs on a specific date before pricing date. The cost announces on a yearly basis. It has been for instance 0,8% yearly for index-linked notes whose underlying is some of the Nordic indexes. Nordea discloses the embedded structured costs on products' sales material from now on.

Svenska Handelsbanken, another fairly major issuer in Finland, reports that the embedded structured costs has been 0,3-0,7% on a yearly basis in its index-linked note issues in Sweden (Edlund, Eriksson, Iwarson, and Sjögemark, 2004). Handelsbanken's index-linked note issues are based on the same principles in Finland and in Sweden.

As you can find from the earlier, the subject of the study, payout features of capital guaranteed structured retail notes sold in Finland 2002-2007, is a highly topical issue at the moment. I assume that during the study, several new articles will be published and recommendations will be given. We will see about that.

Recently, on February 2008, Finnish Structured Products Association published a recommendation that its members start to disclose the structuring costs in all structured notes offered to non-professional clients in order to increase the transparency of these products. The idea is that components of the specific structured note are valued on a certain valuation day. This valuation day is mentioned in the documentation, it is a specific day shortly prior to the issue date or the start of the subscription period. The production cost of the structured note is the sum of the values of the components on the valuation date. The difference between the subscription price and the production cost of the structured note is defined as the structuring cost. This method is also approved by Finnish FSA.

For many structured product groups, no uniform naming conventions have evolved yet, and even where such convention exists, some issuers will still use alternative names. There is a brief glossary at the end the study explaining some of the structured products-specific words that are utilised. In the study I use words 'structured notes' as a synonym for 'structured products'. The word 'note' contains no reflection of the length of the

product. I utilize the word distributor describing the seller of the note to retail customer. Distributor is not necessarily the issuer of the note.

1.2.Research problem and hypotheses

The basic difficulty behind structured notes for retail investors is the lack of transparency. It is almost impossible for an individual investor to evaluate the favour of divergent payout features, calculate the expected payoffs of complex instruments and discern the size of the embedded costs. Some issuers or distributors might be less greedy than others.

The main research problem can be expressed in a following way: What payout features are used in capital guaranteed structured retail notes sold in Finland in 2002-2007? The sub-problems can be described as: Have the complexity of payout features changed during the time period? Are there distributor specific payout characteristics in distributed notes? Are the notes linked to emerging markets more complex than others linked to developed countries?

These questions will be answered in a detailed way. A set of hypotheses is launched to help answering to these questions. Different kinds of payout features are analysed thoroughly.

H1: *Payout calculation has become more complicated.*

The idea behind this hypothesis is the Finnish FSA's (Rata) article "Greater complexity of return calculation impairs comparison of index-linked notes" on The FSA Newsline in September 2004. The article describes how the terms of index-linked notes have become more complex and investors must be to an increasing degree familiar with the behaviour of underlying assets in order to estimate the return expectations and favour of the terms and conditions of the notes. This hypothesis is tested by dividing the structured notes into groups of traditional and complex payout features, described in

more detailed way in methodology section. Yearly proportions of complex notes are then compared to previous year's proportions statistically. Traditional-group of structured notes may contain following features: Return is based on the performance of underlying asset or assets and final value is calculated either as a last value or with averaging period. The averaging period-feature, Asian option, is included because otherwise the number of notes in the traditional-group would be limited to three. The complex group includes also other than traditional features. A list of principal protected structured notes' payout calculation features is on appendix A.

H2: *There are differences between distributors utilizing more or less complex calculation features than others on the average.*

This hypothesis is partly linked to the Finnish FSA's article "Pricing of index-linked notes not sufficiently transparent", released in March 2007 and partly to Stoimenov and Wilkens (2005) results. The FSA's article discloses that part of the fee charged from investors may have been embedded in the subscription price directly so that no specific information on it or its extent has been revealed to the investors. The assumption behind this hypothesis is that the greater the lack of transparency, easier to include hidden costs to subscription price. The more complicated products, the greater the lack of transparency, at least in the retail segment.

Stoimenov and Wilkens (2005) examined the pricing of equity-linked structured products in the German stock index DAX and on the 30 individual stocks from this index. Their major finding related to this hypothesis is that products with embedded exotic options are subject to even higher premiums, compared to common classic products. More details of this study and other related studies are reviewed in "Literature review"-chapter.

The replication of the structured notes payout profiles is very demanding for majority of the distributed notes and this is not my intention. The goal of this hypothesis is to show that there are differences between distributors utilizing more or less complicated payout features than others on the average. This hypothesis is tested using the groups of

traditional and complex, as in the first hypothesis. The proportion of single distributor's complex-notes is compared with the average proportion of other distributors.

H3: *There are differences, utilizing Asian options, on the effective point in time from which the payout's final value is calculated compared to notes' maturity between distributors vs. others on average.*

The idea of this hypothesis is that the Asian options' averaging period may change substantially between different distributors. For instance, a five-year note whose final value of underlying is calculated using average values of yearly-observations, is in fact using effectively third year's value of underlying in payout calculation, not the final observation from year five. This can be illustrated by thinking the final value as the sum of each year's end value divided by number of years ((1+2+3+4+5) / 5 = 3). The final value is third year's value, on average. Another example, a five-year note using average values from end of years 4 and 5; the final value's point in time is 4,5 years ((4+5) / 2 = 4,5). The final value's point in time divided by the notes maturity describes proportionally the effective point in time from which the final value is calculated. In the first example above the result is 60% (3/5) and in the second 90% (4,5/5). Higher the percentage value, better for the buyer of the note, other things being equal. This method is used in this hypothesis when comparing the effective point in time of notes' payout calculation to maturities of the notes.

H4: S*tructured notes whose payout is linked to emerging markets use more complex payout features than notes linked to developed markets.*

The inspiration for this hypothesis is the emerging markets' usually higher volatility compared to developed markets. This makes the underlying options more expensive. Offsetting the higher costs, emerging markets' notes include more complex features than developed markets notes. This is tested by dividing the groups of traditional and complex further into emerging markets and developed market notes. The splitting to

developed and emerging markets notes is done according to the underlying assets' country of location utilizing the Morgan Stanley Capital International's Emerging Market Index classification as of July 2006 (The MSCI Emerging Markets Index, 2008). The notes whose underlying contains only emerging markets assets or developed markets assets are included to test the hypothesis.

1.3.Objectives, contribution and key results of the study

The main contribution of the study is the in-depth analysis of the distinct terms and payout features of capital guaranteed structured retail notes sold in Finland 2002-2007. To my best knowledge, no such a research has conducted in Finnish markets before, although the importance of the structured note markets has increased hugely. However, some academic studies have conducted in the field of structured products covering also partly the sub-category of retail notes, mainly in the U.S., German and Swiss markets. Their results quite clearly indicates that all types of structured products are priced, on average, above their theoretical values and products with embedded exotic options are subject to even higher premiums compared to common classic products.

The objective of the study is to find out the different kinds of payout features related to capital guaranteed structured retail notes. Moreover, the goal is to sort out if there are differences between distributors and their notes. Hypotheses two and three try to respond to this, along with other results. Stoimenov and Wilkens' (2005) study, for instance, reveals that products with less transparent exotic options are subject to even higher premiums compared to common plain vanilla options.

Recommendations for the retail investors will be given in chapter seven "Conclusions and recommendation" to analyse distinct terms and conditions related to issuers, distributors, market practices and the payout features of capital guaranteed structured retail notes. This hopefully helps retail investors to select a best suitable note available for individual needs.

The data used in the study comprises of 343 capital guaranteed structured retail note issuances between 2002 and 2007. Nordea Bank is the largest issuer and distributor in

the sample in terms of number of notes. Second largest distributor is OKO Bank followed by Bank of Åland, Svenska Handelsbanken and FIM Group. There are totally 12 different distributors using their own brand and name in the notes and 11 different issuers. Credit Suisse is the only issuer without distributing its own notes.

The results show that equity related underlying assets cover the majority, 264 of 343, or 77% of issuances. Mixed assets-group is the second popular with 8,2% of issues. It consists of underlying assets from at least two different classes. The third often-used class is interest rate structures followed by currencies and commodities. Also complex predetermined strategies, credit products and hedge funds are available with capital protection for retail investors through structured notes.

The key results of the study include that there are statistically significant differences between distributors' notes. The result of the hypothesis two, "There are differences between distributors utilizing more or less complex calculation features than others on the average" is statistically significant for the maximum and minimum proportions of distributed complex notes. The notes distributed by FIM Group utilize proportionally the most, 89% of sold notes, complex payout features. In contrast, United Bankers uses proportionally the least complex notes, 17% of sold notes. The average of distributed complex notes is 56%. More detailed analysis is in the chapter six, "Results and analysis".

Another same kind of outcome is the result of the hypothesis three, "There are differences, utilizing Asian options, on the effective point in time from which the payout's final value is calculated compared to notes' maturity between distributors vs. others on average." The proportions are statistically significant for the maximum and minimum values. The notes with Asian options distributed by SEB utilize proportionally the lengthiest averaging period and therefore receives the lowest effective point in time, 55% of the notes' length. Practically this means, that a five-year note is using six-month observation intervals and the averaging period is the whole time to maturity of the note. In contrast, Handelsbanken uses the shortest averaging period and therefore receives the highest effective point in time, 91% of the notes' time to maturity.

The result of the hypothesis one, "Payout calculation has become more complicated", is not statistically significant although some yearly progress to that direction can be seen. The number of issued complex notes, however, is not such great that the results would be significant.

The greatest surprise for me is the results of hypothesis four, "Structured notes whose payout is linked to emerging markets use more complex payout features than notes linked to developed markets." I thought the results would be in-line with the basic assumption. However, they are very much opposite. The proportion of complex notes with emerging markets assets is 29% while the proportion of developed markets assets is 54%. My conjecture is that the more expensive options are offset through lower participation rate and longer averaging periods.

1.4.Limitations of the study

Although the data set is quite large, 343 public capital guaranteed issues, it does not cover all issues in Finland during the time period. I acquired the terms and agreements sheets from the Finnish Financial Supervision Authority's prospectus database and from issuers' or distributors' web pages in the autumn 2007. The latest issue of one of the major issuer in Finnish market, Nordea bank, is from the January 2007. After that Nordea began to utilize its Swedish MTN Program and the terms and agreements sheets became in practice unobtainable.

FSA's homepage expresses: "A securities' issuer or anyone who applies for securities to be admitted to public trading is obliged to publish a prospectus. If the home state of the securities is Finland, the competent authority is the Finnish Financial Supervision Authority." That is why it is quite comfortable to obtain prospectuses whose are issued under Finnish programme for the issuance of debt instruments. The prospectus hunting becomes much more complicated with issuers whose prospectuses are approved elsewhere. Many of those prospectuses are hard or almost impossible to obtain. There are also some taxation related matters that encourages issuers or distributors to utilize notes whose are not issued under Finnish programs.

1.5.Structure of the study

This study is structured as follows. Chapter two provides a brief literature review, what has been examined and written about the structured products and especially its sub-category of retail products. Chapter three deals with the phenomenon of structured products as a whole group, not only retail-side, in general terms, what they are, how they are generated, how they operate, what is the value added of such products for investors and what kind risks they carry. Chapter four focuses on structured retail products and different kind of structures. Chapter five includes the description of the data and methodology. Chapter six shows the results and chapter seven conclusions and recommendations. Chapter eight contains the references. Appendixes are placed after references and last but not least, there is glossary of the utilized terms at the end of the Master's Thesis.

2. Literature Review

Despite the increasing importance of structured products for retail investors, quite a little research in finance is done so far in this sub-category of retail products. In Finland, there exist only few studies related to structured retail products and their markets. The following literature can be divided into three groups: Finnish studies related to Finnish markets, pricing of structured products compared to replicated portfolios and other studies concerning structured retail products.

2.1.Studies of Finnish markets

There exist only couple of studies regarding Finnish markets of structured retail products, two masters' theses and a working paper. The working paper is presented first and masters' theses afterwards.

Järvinen and Saarikko (2000) studied the Finnish retail investors' conception of index-linked notes in the form of questionnaire. The sample consists of 224 retail investors and is carried out through Merita Bank's branches. Their findings are that Finnish retail investors are generally highly risk averse and investors consider the capital guarantee as the most important feature when choosing to invest in index-linked note. The other characteristics are maximum participation rate and no minimum return. Investors also prefer notes whose payout is linked to some general European stock index. However, the sample consisted also risk-seeking persons. Järvinen and Saarikko conclude in compliance with results, there have to be wide variety of diverse risk-profile index-linked notes available for maximizing the total satisfaction of retail investors.

Kontra (2001) examined the development of Finnish structured products markets and the profitability of five Finnish equity-linked notes from the investors' point of view in her master's thesis. Kontra utilized GARCH (p,q) (Generalized Auto-Regressive Conditional Heteroscedastic) –model simulation to evaluate the expected performance of underlying indexes. Her results are that returns can be explained using GARCH-

model simulation. Kontra concludes also that capital guaranteed index-linked notes could be a suitable investment solution for risk-averse investors. Increasing volume of index-linked note issues can be seen as their good profitability for issuers, Kontra states.

Koivula (2003) studied in his Master's thesis Finnish equity linked notes and their profitability to issuers in the period of 1997-2001. He examined the subject by hedging the issuer's equity linked notes position and calculating the net present value of the hedged position. In the study, he used a sample of seven notes linked to Dow Jones Euro Stoxx 50 Price Index. Furthermore, he examined how the potential profitability compares with managing mixed asset portfolios. Koivula's results suggest that Finnish equity linked note issuances have been profitable in the period of 1997-2001. Results also indicate that issuances have been more profitable than managing reference portfolios. The notes under study have provided the issuers' with a mean excess return of 6,36% per annum compared to managing reference portfolios. This translates to more than five times the profitability of the reference group. Even the lower 99% confidence interval suggests the notes have yielded 1,5 times the return of portfolio management. However, Koivula used some 'perfect world' assumptions that might skew the results. These assumptions include; first, the world is risk-neutral, i.e. all individuals are indifferent to risk. Therefore, option prices based on risk-neutral valuation are correct not only in a risk-neutral, but also in the real world. Second, there are no transaction costs. Third, underlying indexes are non-dividend paying and fourth, interest rates are assumed linear.

2.2.Pricing of structured products compared to replicated portfolios

Pricing of structured products compared to their replicated portfolios' theoretical values has been under interest of some studies. The first empirical examinations were conducted for market-index certificates of deposits and an S&P 500-index note at the U.S. markets in 1990. After these, some studies are carried out. The most relevant of these studies are presented below.

Chen and Kensinger (1990) examined the pricing policies and hedging strategies for the issuers of market-index certificates of deposits (MICD). They derived implied standard

deviations from the observed quotations and compared them with implied standard deviations calculated from the prices of exchange-traded index options. They find inconsistencies in the terms being offered, both between issuers and among MICDs of different maturities and types offered by the same issuer. Especially, the terms of the put MICDs are out of equilibrium.

Chen and Sears (1990) studied the Salomon Brothers' S&P 500-indexed note (SPIN) using a modern bond valuation theory and the Black and Scholes' option model to explain the observed prices of the SPIN. While the results indicate the presence of some pricing biases during an initial seasoning period for the SPIN and during the period immediately following the market crash of 1987, overall the pricing errors are very small. The used daily closing prices is from the period of the issuance date of September 1, 1986 to December 31, 1987. A sensitivity analysis of the data inputs unveils the pricing effectiveness to be particularly sensitive to the measurement of the bond yield as well as the volatility implicit in the option component. Authors also examined the possible motivation behind the issuance of the SPIN by analyzing the potential benefits and costs of the security to Salomon. Authors state that while Salomon has immediate cash flow benefits in the form of the option value, there is the potential risk of additional costs in the form of option payout at the maturity date of the SPIN. Nonetheless, these costs can be managed through appropriate hedging in the futures market.

Burth, Kraus and Wohlwend (2001) studied the pricing of structured products in the Swiss market. They investigated the initial pricing of 275 concave products, reverse convertibles and discount certificates, on Swiss blue chip companies that were outstanding on August 1, 1999. Burth et al. compared the terms in the primary market to equivalent strategies in the underlying markets and in the exchange-traded options. They find a statistically significant bias in favor of the issuing institutions. Based on their data, Burth et al. are not able to judge what portion of this difference is caused by costs and what portion goes to the issuing bank as a net profit. Burth et al. also examined the role of the co-lead-managers in the issuing process of a new instrument. These co-lead-managers are smaller banks that initiate the launch of a new product. They collect quotes from various bigger issuers and eventually cooperate with the one who gave in the best offer. As a result, structured products whose issue is co-led by a

third-party are significantly better priced and show a smaller dispersion of pricing errors.

Wilkens, Erner and Roder (2003) examined the issuer pricing of structured products during exchange trading in November 2001 comparing daily closing quotes of 170 reverse convertibles and 740 discount certificates to values based on duplication strategies using call options traded on the Eurex. Extracting implied volatilities from comparable call options, fictitious product values are calculated and compared to prices quoted in the secondary market. The authors find evidence of an overpricing of both analyzed structured products, reverse convertibles and discount certificates, mostly in favor of the issuing institution. In assessing the driving factors of pricing policies, authors conclude that issuers directed their pricing towards the product lifetime and the incorporated risk of a redemption by shares bearing in mind the volumes of sales and repurchases to be expected from issuance to maturity.

Stoimenov and Wilkens (2005) examined the pricing of equity-linked structured products in the German stock index DAX and on the 30 individual stocks from this index. The daily closing prices of a wide variety of structured products are compared to theoretical values derived from the prices of exchange-traded options on the Eurex. The study thus searches to reveal implicit premiums or discounts incorporated in product prices quoted by the issuers, relative to theoretical values. Furthermore, the purpose is to identify driving factors behind the issuers' pricing policies. Therefore, the study focuses separately on primary and secondary markets.

In the first step, Stoimenov and Wilkens distinguished between products with plain vanilla and those with exotic option components. Products with plain-vanilla components are further differentiated between Classic-, Corridor-, Guarantee- and Turbo-products. Products with exotic option components are divided into Barrier- and Rainbow-products. Three different hypotheses are set. First, in the primary market, equity-linked structured products are priced, on average, above their theoretical values. Second, the overpricing at issuance is higher for products with stock underlyings than for those with index underlyings, and, for more complex products, compared to Classic instruments. Third, in the secondary market, implicit premiums systemically decrease as maturity approaches.

The main results of Stoimenov and Wilkens' study can be summarized as follows. In the primary market, all types of equity-linked structured products are priced, on average, above their theoretical values, disfavoring buyers who hold their positions until maturity. The underlying type, stock vs. index, is found to be one of the pricing factors. Products with embedded exotic options are subject to even higher premiums, compared to common classic products. This supports the hypothesis that the degree of overpricing is related to the issuer hedging costs. In the secondary markets, surcharges systemically decrease as products approach maturity. This holds for almost all subgroups of products.

The results of Stoimenov and Wilkens' study suggest that a careful analysis is needed when trading equity linked structured products. In spite of the easy access to these instruments, experienced investors should consider replicating the payout structure on options exchanges. However, it should be acknowledged that a useful packaging of single components could justify the implicitly demanded premiums as compensation for the issuers' structuring service. Therefore, without further information on hedging, capital, and other issuer-specific costs, no evaluation of the profitability of structured products for the issuing institution can be made.

Henderson and Pearson (2007) examined the payout patterns of the structured equity products sold publicly in the U.S. markets by the major investment banks. The sample of structured equity-linked products used in the study comprises to authors' knowledge the entire universe of publicly registered structured equity-linked notes issued by financial institutions in the U.S. during the period 1992 - 2005, excluding private, over-the-counter transactions. In other words, sample contains 1.588 issues with aggregate proceeds over USD 50 billion. These equity-linked products are linked to common stocks, equity indexes, or multiple stocks or indexes. Authors found a striking pattern in the design of structured products: products linked to individual stocks predominantly have concave payout functions whereas products linked to equity indexes have convex payout functions.

Additionally, authors perform a pricing analysis of the currently most popular equity-linked structured product, Morgan Stanley's SPARQS (Stock Participation Accreting

Redemption Quarterly-pay Securities). The SPARQS are ideal for the analysis since their structures are consistent across issues, almost all SPARQS are listed and traded on the AMEX, and SPARQS have been issued regularly since 2001. The analyzed sample contains 64 SPARQS with original maturities of only slightly more than a year. Product is also callable after about six months. The pricing analysis confirms that investors pay a premium at the time of the initial public offering of approximately 7.71% on a value-weighted basis and 8.77% on an equal-weighted basis. The magnitudes of the markups on these structured products are too large for the demand for them to be explained by rational models. Thus, the patterns documented seem likely to be due to investors' cognitive or other behavioral biases. Results suggest that the biases cause investors to demand different payout profiles, depending on whether the underlying asset is an individual stock or a stock index.

Baule and Wilkens (2008) examined the bank margins in the German secondary market for exchange-traded structured products, with special emphasis on the influence of issuer bank's credit risk. According to authors' knowledge, all empirical literature concerning the valuation of structured financial products focuses on the banks' total margins, i.e. the relative difference between the quoted price and the theoretically fair value. Further, these studies either totally neglect the possibility of the issuer's default or they neglect issuer-specific credit risk and dependencies between market- and credit risk. The examination is carried out with discount certificates, as they are the most popular type of structured products in Germany. The theoretical part presents a structural model to evaluate discount certificates that takes into account the risk of the issuer default, similar to Klein (1996) with regard to vulnerable options. The default-free Black and Scholes (1973) and the Hull and White (1995) models, both of which can be regarded as special versions of the structural model, serve as benchmarks. Empirical part examines quoted prices of discount certificates on DAX stocks of five major issuers. For each issuer the total margin and the credit risk margin, i.e. the part of the total margin which draws back to credit risk, is analyzed. In contrast to earlier studies, this concentrates on bank-specific credit risk and does not rely on issuer averaging, i.e. rating-specific, or maturity-averaging spread curves offered by investment banks or exchanges. Results show that total margins are found to be rather low compared to earlier studies, on average, lowest being 0,67 % and highest 2,27%, whereas the credit risk margin appears to be an essential part of the total margin. The

analysis suggests that total margins have decreased over time, probably caused by the rising competition among issuers. The results imply that the credit risk margin, i.e. issuers' credit risk, is an important source of bank profitability in the market segment analyzed here. Private investors in derivative markets will certainly become more familiar with standard pricing models for default-free securities. In contrast, they will still ignore the issuers' credit risk generally, or at least the correlation effects. Hence, the proper credit risk margin can be seen as a partly hidden margin. Authors emphasize that banks could, ceteris paribus, increase their margin income by choosing underlyings for their discount certificates with low correlations.

2.3.Other studies

Robinson (1998) examined the inefficiency costs of guaranteed investment products. He used rolling guarantee funds, guaranteed equity-linked notes with Asian call options and guaranteed equity-linked notes with ladder options in the study. Robinson analyzed and simulated the payout structures to find the cheapest way of obtaining the payout from a given type of investment strategy. He applied the work of Dybvig (1998a,b) to calculate the inefficiency costs of three types of guaranteed investment products. Inefficiencies arise because of the path-dependent nature of payout, not because of the provision of guarantees. If investors are concerned only with the final payout, then an efficient strategy is not constrained by any intermediate values. For guaranteed bonds, it is reasonable to assume that only final payout matters.

Robinson's findings include that guaranteed equity-linked notes using Asian options are only mildly inefficient, unless the averaging period is extended to a year or more. For a five-year contract with a one-year averaging period, the inefficiency cost is 0,7% of the initial investment, or 14 basis points per year. The guaranteed notes with ladder options gives rise to an inefficiency cost of 1,5% over five years, or 30 bp per year. As the period of the contract lengthens, Robinson finds that the total cost rises, but the annual cost falls, although not linearly. Rolling guarantee notes give rise to the largest inefficiency costs. Over five years, a 100% quarterly guarantee costs around 1,3%, or 25 bp per year. Similarly, the uncapped 98% guarantee strategy costs 2,4% over five years,

or 47 bp per year. Even so-called zero-premium collar strategy cost around 2,0%, or 39 basis points per year, for a five-year period. In conclusion, Robinson raises question that do investors know the such high costs of intermediate guarantees, or are they just ill-informed?

Fischer (2007) analyses in his study "Do investors in structured products act rationally?" strategies individual investors pursue when purchasing structured products. He examines whether investors actually invest more or less rational than investors that only rely on funds, stocks or bonds. In his study, Fischer utilizes a survey among almost 800 German investors divided into students, bank advisors and other private investors asking for their reasons and impediments to invest in structured products. The majority of the respondents are, however, students (70%) as the questionnaire was filled out in connection with informational events about structured products by a specialized product provider in cooperation with the local student stock exchange societies and took place at universities.

Fischer finds that rational strategies like diversification, hedging against certain risks or reducing costs are important for all investor groups. However, betting purposes also play a considerable role in investors' decision-making process. Comparing investors and non-investors in structured products, Fischer finds that the investor subgroups show different characteristics concerning the actual investment purposes. Student investors, in general, pay more attention to costs and partly show higher diversification intention in comparison with students that invest only directly in stocks, funds or bonds. Bank advisors (professional investors) in structured products, in general, do not pursue other strategies in comparison to direct investors. However, private investors pursue several investment strategies, targeting both diversification and betting opportunities.

Further investigating characteristics of investors that act rational in terms of normative theory, in comparison to investors that act irrational and/or inconsistent, i.e. pursuing both diversification and betting strategies simultaneously, Fischer finds that men are more prone to act irrational than women. He also discerns that age, education, regional distribution or experience in securities does not have significant influence on the rationality of investment strategies. However, Fischer shows that intrinsic or behaviour-based attributes like higher risk tolerance, more extensive use of information channels

and a wider use of different product groups seem to indicate irrational behaviour. Nevertheless, irrational behaviour can be corrected by exogenous factors. Investors that receive financial advice when searching investment opportunities act more rational.

Breuer and Perst (2007) analysed discount reverse convertibles and reverse convertible bonds as typical examples of structured products in the context of the cumulative prospect theory of Tversky and Kahneman (1992) and Thaler's (1985) hedonic framing rule for mental accounts. Moreover, authors paid attention to the importance of individuals' own competence levels as expressions of varying attitudes towards analyzed products. Authors made following findings: First, discount reverse convertibles and reverse convertible bonds are of interest to investors who underestimate the corresponding return volatility and who moderately estimate the expected return of the underlying stock. Second, the demand for reverse convertible bonds by individual investors can only be understood in the context of hedonic framing. Without hedonic framing, there is hardly any need for reverse convertible bonds as they are a combination of a discount reverse convertibles and riskless lending. Third, the demand for structured products depends on the subjectively felt competence level of private investors. Reverse convertible bonds in particular seem to become more attractive for individuals with smaller competence levels. Fourth, for the numerical analysis, the subjectively felt competence level of possible customers turns out to be more relevant for the market success of analyzed structures than even the optimization of the issue price and, especially, than the redemption value or periodical interest payments connected with these structured products.

Vanini and Döbeli (2007) analysed the investment behaviour of retail clients concerning structured products. They conducted a questionnaire survey and a field experiment, respectively. Subjects of the survey were 59 employees of a bank who came from different business units and who also differed in their age, sex, and position within the institution. The field experiment is issuance of same bank's structured product comparable to the questionnaire.

Vanini and Döbeli draw four major conclusions. First, behavioral finance model is a fairly successful way to describe stated and revealed investment behavior. The questionnaire participants behave in a consistent manner within the behavioral finance

model. Participants stated they buy products theoretically that are consistent with the investment motives they announced at an earlier stage. On the other hand, results suggest that participants do not behave in accordance with expected utility theory. Second, communication style using well-known and accepted behavioral finance insights to present a structured product is powerful. This style has an impact on women and first-time buyers of structured products. In contrast to many studies citing gender differences between men and women in their investment behavior, authors found both in a questionnaire and a field experiment set-up that the gender difference impact vanishes when the investment motives behind investment products are described in a comprehensible, laymen's terms, i.e. in a way that contrasts to the commonly used technical product description. Further, the field experience shows that considering behavioral finance insights in selling a structured product increases the fraction of first-time buyers compared to those structured products that are described in technical language. Third, the prediction power of surveys is limited. Potential investors do not act in a way they say they are going to act. For instance, the stated values for the investment amounts are 1.7 times higher than observed ones. Further, authors found that employees, who have not bought structured products before, heavily overstate their willingness to subscribe them. In the questionnaire, 86% of the employees announce that they will subscribe a structured product for the first time, but only 27% of the employees who subscribed the issued product are actually first-time buyers. Fourth, a field experiment conducted with a small number of the bank's own employees provides a good estimation of the investment decisions of the bank's overall clients. Bank's employees who subscribed the issued product behave much like the larger group of the remaining clients. Thus, authors conclude that the client research can be done in a cost-efficient and effective way by using a small number of the firm's own employees.

Bernard, Boyle and Tian (2007) examined the optimal design of structured products from the seller's perspective. More precisely, authors discuss a generic index-linked product with a minimum guarantee, floor, and which meets or beats an index with a certain confidence level. Authors provide a theoretical framework for the design of structured products that meet certain conditions. They analyzed the optimal design from the seller's perspective and showed that optimal design of a generic index-linked product with capital protection does not depend on the issuer's risk preferences. If the guarantee is stochastic or the maturity is uncertain, results suggest that the optimal

design will depend on the issuer's utility function. With no protection at all, there may be no optimal design for the issuer. The optimal design is robust and tends to be optimal without information on the market, or on the pricing function of the issuer unlike other strategies such as the maximum probability strategy.

Results can be used, according to authors, to provide a perspective on the design of existing contracts. First, the theoretical designs obtained are consistent with existing structured products that often include a capital protection although issuers have distinct preferences and might have distinct pricing models. Second, a product design without capital protection may not be optimal for the issuer. Third, if the guaranteed is random, issuers with different risk preferences will have different optimal designs.

The Netherlands Authority for the Financial Markets (AFM, 2007) carried out an exploratory analysis of structured products. The primary purpose is to improve the AFM's understanding of the market and its products. Another goal is to provide an answer to the AFM's question of whether investors are capable of understanding the suitability and quality of structured products. The research revealed that consumers do not read product brochures properly. Although brochures are written in correct Dutch, consumers nevertheless have great difficulties reading them thoroughly. A second finding is that investors do not always understand the way in which structured products work. Both these findings cause concern for the AFM, since investors may select an unsuitable product for them, which according to AFM jeopardizes the proper operation of the market and, if investors are disappointed in their choices, the confidence in the market.

The AFM findings include that the quality of the information provided to investors is not as good as it should be. Prospectuses do not focus sufficiently on the information consumers need to make well-considered investment decisions. Moreover, the legal entity chosen for the products means that financial information leaflets are not obligatory. This makes brochures the consumer's principal source of information. Unfortunately, brochures vary considerably in quality. The AFM also expresses that the public analysis of structured products in the Netherlands is limited. The Netherlands Bankers' Association has issued several recommendations to its members regarding the transparency of the information provided to investors. The Association has also

launched two important initiatives aimed at improving the market for structured products.

3. Structured Products

This chapter describes the structured products as a whole group, not only the sub-category capital guaranteed structured retail products.

The first structured products have been issued as early as 1985 (Peng and Dattatreya, 1995). Since then, the market for structured products has been growing. Illustratively, the growth has exploded in recent years. A market that 10 years ago was the domain of professional investors has evolved into a mass market. The amount invested in structured products every year in Europe is approaching the level of the investments in traditional investment products (AFM, 2007). The total outstanding amount invested in retail structured products across the major European markets grew to €569 billion at the end of 2006 (Benson, 2007). This compares to €7,574 billion held in all European investment funds at the same time (EFAMA, 2007). Structured products seem perfect for meeting specific investment needs, such as capital protection, and as such, may be used for building up individual pensions and mortgage repayments in the future.

3.1.Characteristics of structured products

Let's begin with couple of definitions. According to Thonabauer (2004) structured products refer to combinations of individual financial instruments, such as bonds, stocks and derivatives. At first sight, most of these composite products are very similar to plain vanilla coupon bonds. For many product groups, no uniform naming conventions have evolved yet, and even where such convention exists, some issuers will still use alternative names.

Peng and Dattatreya (1995) describe structured notes as follows. Structured notes are fixed income debentures linked to derivatives. They can be issued by corporations, banks and financial institutions, municipals, U.S. Agencies, sovereigns and

supranationals. The maturity of structured notes ranges from as short as three months to longer than ten years.

One of a key feature of structured notes is that they are created by an underlying swap transaction. The issuer rarely maintain any of the risks embedded in the structured note and is almost always hedged out of the risks of the note by performing a swap transaction with a counterparty. This feature permits issuers to produce notes of almost any specification.

From an economic point of view, the structured products can be broken down into two main components (Georgieva, 2005):

Investment view + Payoff structure = Structured product

The investment view is driven by factors such as:

- Investor expectations towards the underlying: bullish, bearish, flat, range bound, ladder etc.
- Choice of underlying. The underlying may be available in a readily investable format or has to be synthetically generated. The underlying can be:
    - Single stock
    - Basket of stocks
    - Index or multiple indexes
    - Mutual fund, hedge fund, fund of hedge funds, discretionary manager
    - Systematically rebalanced strategy
    - Volatility, correlation, dispersion
    - Hybrid
    - Credit
    - Inflation
    - Commodities etc

The investment view can be based on fundamental or technical research. The choice of underlying may depend on the market, investor's expertise and on fundamental factors. Payoff structure is a mathematical formula applied on the underlying and includes the following features (Georgieva, 2005):

- Cash flows timing: periodic coupons from an underlying that pays none; total lump payment when underlying pays coupon; variable coupon or fixed coupon; fixed coupons during certain periods of the life of the product etc.
- Risk profile: leverage, conditional capital protection, partial capital protection, full capital protection
- Maturity: Short-term, medium-term or long-term

The investor base for structured products has exploded over last years. Institutional investors are as diverse as pension funds, money market funds, mutual funds, hedge funds, total return funds, asset managers etc. They share a common goal, to obtain performance that cannot be easily obtained from conventional fixed income instruments, and in return take on acceptable level of risk.

Retail investors have also found the asset group of structured products. Structured retail products often contain principal guarantee, and that is suitable for risk-averse investors. Structured products allow access to new and innovative asset classes and exotic markets such as commodities, emerging equity markets, credit risk and currencies.

Structured products tend to contain possible periodical payments and redemption at maturity. What sets them apart from plain vanilla bonds is that both periodical payments and redemption amounts depend in a rather complicated fashion on the movement of stock prices, indexes, exchange rates or future interest rates.

For the valuation purposes, structured products are generally replicated with simpler instruments. Given the assumed absence of arbitrage possibilities in financial markets, the portfolio of these simpler products must have the same payoff profile and market value as the structured products. Thonabauer (2004) sees two merits of this approach. First, simple valuation rules can be used to calculate fair market prices for the simpler

products. Second, risk control is more efficient since the replicated parts either are directly tradable or may be hedged more easily. However, it is not possible to break all structured products down into simple components. Numerical procedures have to be employed in order to valuate the products and assess the risks involved in cases where the structured product has to be depicted as a combination of complex instruments in nature and thus difficult to valuate and hedge on the capital markets.

3.1.1.Advantages of structured products to investors

The size of the structured products' markets has multiplied so quickly that there has to be some other explanation for this than only excellent sales people. Advantages of structured products for the investor are at least the following (Peng and Dattatreya, 1995).

- Customisation: Structured products can be tailored to fit the unique requirements of individual investors. The ability to provide customised solutions is unique among fixed income products and is one of the main driving forces behind investing in structured products. For risk-avoiding investors, products can be created that offer guarantees of protection against price decreases, while investors who prefer greater risks can be offered products that increase the potential profits.

- Yield enhancement: Structured products permit investors to obtain higher than market yields if certain scenarios were to come true.

- Exotic payout. Structured products can provide a variety of customised and exotic-type payouts that cannot be obtained in the fixed income arena.

- Risk allocation and diversification: Structured products permit investors to obtain exposure to different market sectors by purchasing only one packaged security. In this sense, it is a packaged portfolio. Investors can also reallocate capital currently deployed in one asset class into another asset class.

- Total return tracking. Investors who track the total return of a certain index can purchase structured products to eliminate the index tracking error and simplify portfolio management.

- Sole access. Investors who have difficulty accessing certain market segments are able to access them via structured notes. Thus, an investor who seeks to perform a hedge in another market but who, for certain reasons, cannot transact in that market can purchase a structured product that contains the required hedge. Corporate investment policy regulations, for instance, may be such a restrictive reason. For retail investors, structured products enable access to new and innovative asset classes and exotic markets.

- Liquidity. Although this has traditionally been the weak component of the structured products market, secondary market liquidity has improved dramatically. Many investment and commercial banks have established desks dedicated to the trading of secondary structured products. This fact, in conjunction with the large volume of outstanding secondary structured notes has resulted in greatly enhanced secondary market liquidity.

3.1.2. Advantages of structured products to issuers

The rapid growth in the volume of structured products indicates that, in conjunction with the growth of investor interest, issuers have made structured products an integral part of their funding mix. The issuer is often able to achieve lower funding costs than levels achievable by issuing fixed rate bonds. This additional savings is also necessary to cover issuer's extraneous issuance costs. These include the bookkeeping cost of maintaining the swap counterparty's credit risk, legal costs and other costs such as daily positional monitoring and dynamic hedging.

Structured products can be developed and launched relatively quickly and easily nowadays. This allows issuers to respond accurately to new developments and trends on the market. Additionally, the flexibility of structured products means that issuers can develop unique and distinct products for all their customers. The heterogeneous nature

of this type of product results in limited price-based competition, which creates opportunities to realise higher profit margins than do more standardised products.

3.2.Different categories of structured products

Structured products can be grouped in many ways according to investor target group, outlook of markets, underlying structure, risks involved etc. One of the most utilised groupings of these different flavours is to divide them into four general categories such as (Bamber, 2004):

- Basic principal protected structures
- Advanced principal protected structures
- Non/Partially principal protected structures
- Yield-enhancement strategies utilising non-principal protected notes

3.2.1. Basic principal protected structures

Basic principal protected structure is a structured note with full capital protection at maturity date. Instead of paying regular coupons, the note offers a percentage gain on some major equity index. Lifetime of the note is around five years. This subject will be discussed in greater detail later on chapter 4.1.

3.2.2. Advanced principal protected structures

Advanced principal protected structures contain some additional features to basic structures. The introduction of averaging in the option payout formula arose as one of the most popular structures. The averaging refers to the calculation of the final index level, or in rare cases index opening values, which is made up of several observations as opposed to just one observation at the expiration of the option.

Another highly used additional feature in different structures is a cap. It reduces the maximum payout structure and therefore diminishes option exposure costs. In an effort to increase the cap rate and keep the participation rate near 100%, the introduction of periodic caps has been appealing. As the name suggests, the caps are in place for periods within the note's term.

Callable features are brought to light in equity-linked structures as well. A callable note affords the issuer the right to call the note at predetermined points in time and price before the stated maturity date of the note. In return for this flexibility, the investor will receive greater yield usually in the form of higher participation rate. These additional features will be discussed in greater detail later on chapter 4.2.

3.2.3. Non or partially principal protected structures

Low interest rates and higher volatilities lead many investors to trade off some element of principal protection in exchange for increased equity exposure. This step away from full principal protection is often guided by positive outlook on the equity market at the time. One popular structure as an example is generically called the airbag. The structure typically comprises around five years note that pays all the upside gain on the index plus full repayment of principal if the underlying never touch a predefined barrier level. The barrier is generally set between 60% and 80% of the initial level. A large drop in the underlying must occur for the principal protection element to disappear. The advantage of this structure is the ability to track the underlying equity and have a realistic chance of preserving principal protection. The only difference to basic structure is that the issuer has now in effect purchased from the investor a knock-in put option. The investor has written a put option that does not come alive, knock-in, until a barrier level is reached. In return for the sale of the put the investor receives a premium that covers partly the costs of the vanilla call option and zero coupon bond.

There are many other interesting structures in this "Non or partially principal protected structures"-category. However, my intention is to concentrate on principal protected structures sold to retail investors in Finland. Therefore, I will not investigate this sub-subject further in this study.

3.2.4. Yield-enhancement strategies utilising non-principal protected notes

Yield enhancement structures can provide significant coupons for short-dated investments, well above those offered in bond markets. Structures such as reverse convertible, as shown in figure 1, belong to this category. The idea behind the structure is that investor receives high fixed coupons irrespective of the development of the underlying. The risk is to lose partly or wholly the principal if the price of the underlying stock or index diminishes. The payout is better than direct stock investment with exception of the case when the value of underlying increases more than the coupon payments. High coupons are a kind of protection against price decrease of the underlying. The product suits to investor whose outlook of the price development of the underlying is slightly bullish. Nonetheless, investor prefers to cash in the expected return rather than wait for the uncertain appreciation to realise.

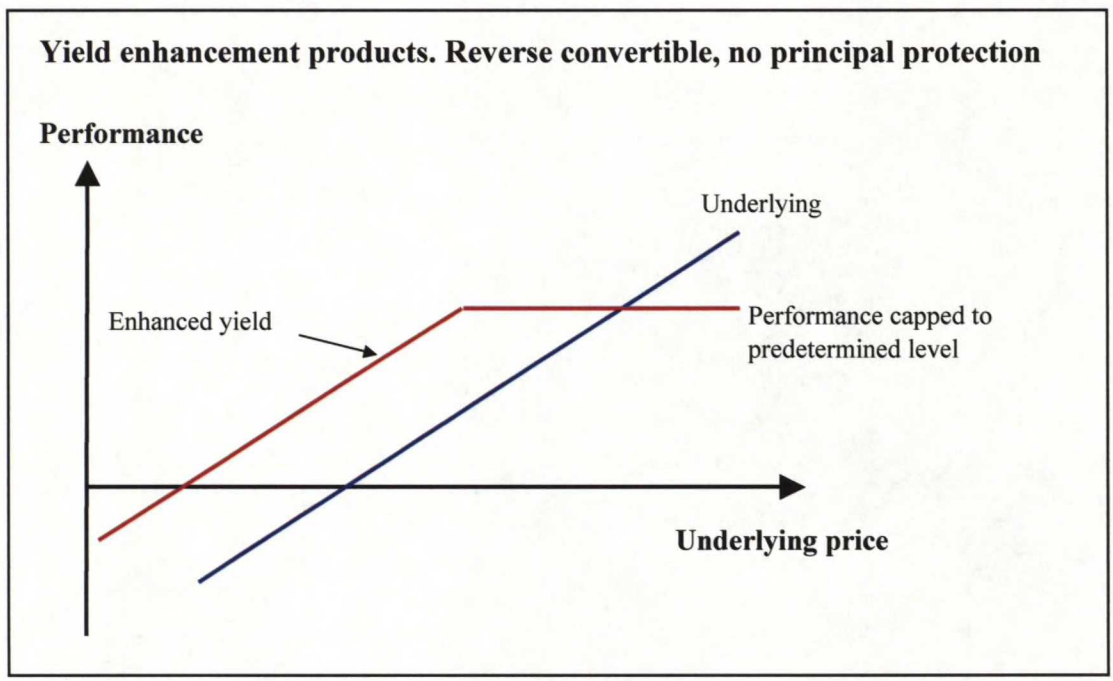

Figure 1. *Yield enhancement products in terms of underlying assets price and performance. Investor has slightly bullish investment view. Upside is capped, unlimited downside. Investor prefers to sell the upside potential and receive a higher return.*

3.3.Risks related to structured products

The most important thing related to investing in structured products can be summarised in 3 words: Understand the risks! The second important follows: Do not buy a product if you are not completely aware of the risks connected to it or if you do not entirely understand the product.

Lately we have learned about enormous problems and losses related to different kinds of structured products and market segments including subprime mortgages, asset backed securities (ABS), collateralised debt obligations (CDO), structured investment vehicles (SIV), monoline insurers etc. At the time of writing this, the estimates of total financial losses for subprime related debt are upgraded to a range of $325-$425 billion (BCA Research, 2008). Of this, about $175 billion is realised and reported. I am not going deeper into the present financial challenges but as a lesson, never underestimate the risks involved to structured products.

The subheading "Risks related to structured products" is so extensive that it could be a subject of the whole master's thesis. However, that is not my intention. I am not going to conduct such an in-depth analysis of risks related to structured products. The following risks apply to majority of structured products.

3.3.1. Market risk

Market risk is defined as the risk to a security's value, market price, due to adverse moves in the relevant rate or index. The rate or index may have an effect on exposure in fixed income, currencies, commodities or equity markets.

An institutional investor's assessment of market risk begins with a determination of current and potential future market values. The embedded options and other leverage factors inherent in structured products result in a great deal of uncertainty with respect to future cash flows. Hence, price volatility is generally high in these types of securities. An institution should have a model, which is able to quantify the risks. The model should be able to forecast the change in market price at various points in time for a

given a shift in interest rates or other relevant market factors. For the many variants of structured products which are tied to the shape of the yield curve, the ability to model price effects from non-parallel interest rate shifts is also crucial. In most cases full principal will be returned at maturity date. However, between issue date and redemption date, changes in fundamental factors may influence significantly to the market price.

3.3.2. Liquidity risk

Liquidity risk refers to the risk that an investor cannot sell or unwind a position in a structured product in a reasonably time at its perceived market value, or very close to it. Due to the complex nature of structured products, the number of enterprises able and willing to competitively price and bid for these securities is limited. An active secondary market is only gradually developed. When there are fewer bidders, competition is lessened. Consequently, an investor hoping to liquidate a structured product position prior to maturity date may find that their only option is to sell at a loss.

3.3.3. Interest rate risk

Interest rate risk describes the risk to value of cash flows posed by an adjustment in market interest rates. The unique feature related to structured products is that the risk-reward profile is much more pronounced. In addition, these products often require more specific assumptions tied to exact points on the yield curve. It is not enough to be correct in assuming that rates will increase or decrease. Success investing in structured products can depend on accurately forecasting the timing of a rate change, the magnitude, and the changes to the shape and slope of the yield curve.

3.3.4. Volatility risk

Structured products which have embedded options, assumptions about the volatilities of interest rates and other note specific underlying factors are also inherent. For any of these options which are purchased by investors, e.g. interest rate floors, there exists the

risk that market rate volatility expectations will decrease over time. If this happens, market valuation of these securities will also decrease.

3.3.5. Correlation risk

Correlation risk is the risk that the price of structured product will change because of the change in the correlations between the underlying securities. Correlations play a central role in financial markets. According to Driessen, Maenhout and Vilkov (2005) there is by now considerable evidence that the correlations between asset returns change over time. Asset return correlations often peak during financial crises when multiple markets suffer severe decline in asset values.

3.3.6. Credit Risk

Credit risk represents the possibility that an issuer of a financial product will not be able to repay the possible contractual return, traditionally interest, and principal on a timely basis. Credit rating agencies analyse the credit quality of an issuer and assign a rating to the issuer's obligations. The most familiar credit rating agencies are Standard & Poor's (S&P), Moody's Investors Service and Fitch Ratings. If the credit risk of an issuer increases, investors will demand a higher yield on the issuer's obligations to compensate them for the higher level of risk.

4. Capital guaranteed structured retail products

This chapter describes in more detailed way the basic and advanced principal protected structures. Different underlying assets are discussed, as well as advantages and risks related to capital guaranteed structures. Some points of legal perspective are also included in this chapter.

Capital guaranteed structured retail products have three distinguishing characteristics:

- Redemption at a minimum guaranteed percentage of the nominal value at maturity date, usually 100%.
- No or low nominal interest rates.
- Participation in the performance of underlying assets.

The following figure 2 represents how the capital guaranteed structured product is constructed. On the issue payment date the investors subscribes and pays the note for amount x. The great majority of the amount x goes into the zero coupon bond which will grow to the guaranteed level, usually 100% of the nominal amount. The remaining cash is used to buy options and for charges.

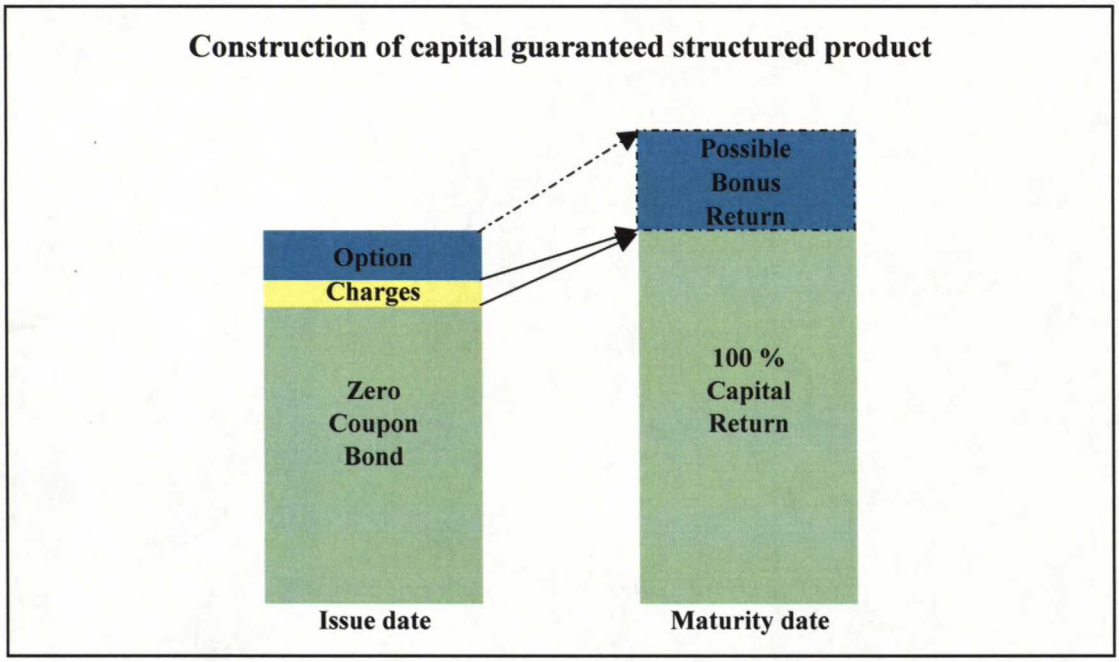

Figure 2. *The payout is constructed via investing the necessary amount into a zero coupon bond so that it will grow to a guaranteed percentage level of the nominal value during the life of the note. The level is usually 100% of the nominal value. The remaining cash is used to buy options and for charges.*

The principal protection means that issuer repays at least the nominal amount back to investor on maturity date. However, the principal protection never involves any opinion on the creditworthiness of the issuer. The extent to which any principal is protected is subject to the quality of the issuer's credit. Retail investors should also investigate the creditworthiness of the issuer to evaluate its ability to meet the terms of principal and possible return payments.

The principal protected products are typically constructed in a way that the issue price of the note is close to par value, i.e. nominal value. It is also quite common that no return payments are made until the note's maturity date. The investor's participation in the performance of the underlying assets can take an extremely wide variety of forms. In the simplest variant, the redemption amount is determined as the nominal value of the note and the percentage change in the underlying asset's price during the term of the note. If this value is lower than the guaranteed redemption amount, the note is redeemed at the guaranteed amount. The redemption amount can also be expressed as the following formula:

$$R = N \cdot \left(1 + \max\left(0; \frac{S_T - S_0}{S_0}\right)\right) = N + \frac{N}{S_0} \cdot \max(0; S_T - S_0) \quad (1)$$

Where

R: redemption amount

N: nominal value

S_0: original price of underlying asset

S_T: price of underlying asset at maturity

The possible range of capital guaranteed structured products comprises combinations of zero coupon bonds with all conceivable types of options. This means that the number of different products is enormous. The most important characteristics for classifying these products are as follows (Thonabauer, 2004):

- Is the bonus return proportionate to the performance of the underlying asset, like call and put options, or does it have a fixed value once a certain performance level is reached, like binary barrier options?
- Are the strike prices or barriers known on the date of issue? Are they calculated as in Asian options or in forward start options?
- What are the characteristics of the underlying asset? Is it an individual stock, an index or a basket?
- Is the currency of the structured product different from the underlying asset?

4.1.Basic principal protected structures

Basic principal protected structure is a structured note with full capital protection at maturity date. Instead of paying regular coupons, the note offers a percentage gain on some major index, usually equity index. Lifetime of the note is typically around five years. Figure 3 shows the payout profile of the capital guaranteed structured product in terms of underlying price and performance. The lower the capital protection, the higher the participation rate, all other things being equal.

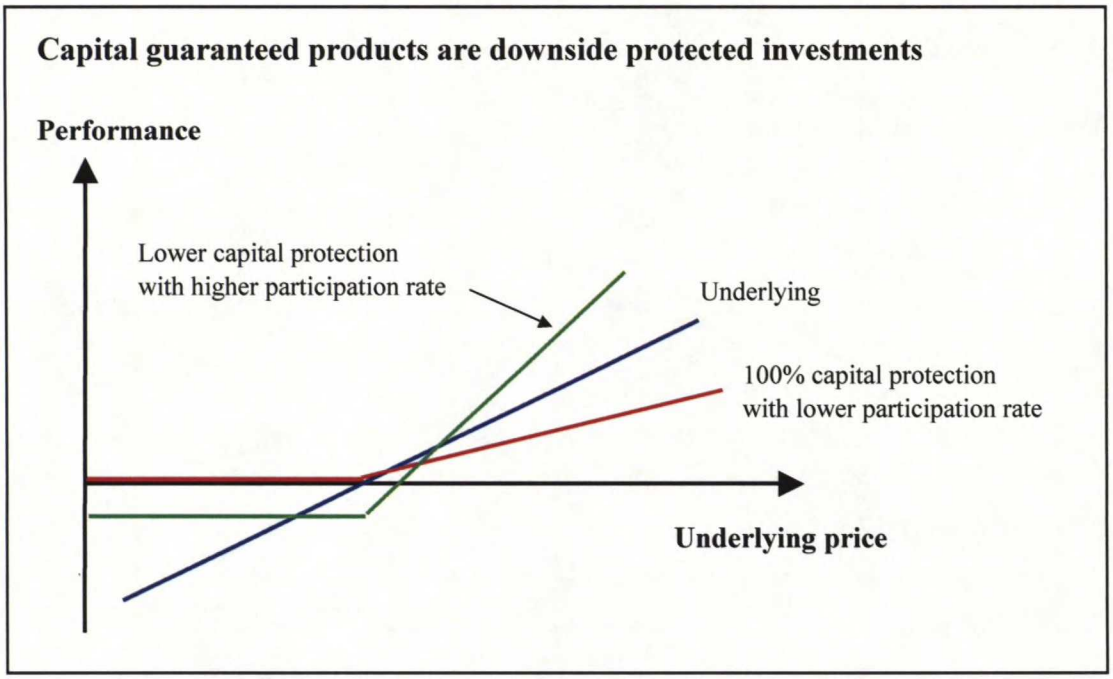

Figure 3. *Capital guaranteed products in terms of underlying assets price and performance. The lower the capital protection the higher the participation rate, all other things being equal.*

The basic principal protected structure consist of a zero coupon bond and a bought European call option. In this specific case, the redemption can also be expressed as follows:

$$R = \max\left(N \cdot a; N \cdot \left(1 + b \cdot \frac{S_T - S_0}{S_0}\right)\right) = N \cdot a + \frac{N \cdot b}{S_0} \cdot \max\left(0; S_T - S_0\left(1 - \frac{1-a}{b}\right)\right) \quad (2)$$

Where

R: redemption amount

N: nominal value

S_0: original price of underlying asset

S_T: price of underlying asset at maturity

a: guaranteed redemption amount

b: participation rate

Valuation of basic principal protected structure is straightforward. The zero coupon bonds are valued using relevant spot interest rates and option premium under the Black-Scholes model. However, my intention is not to go deeper into the valuation theme of different option strategies.

The basic principal protected structure discussed in this sub-chapter is for bullish view of the underlying price. Nonetheless, the outlook can also be bearish for the price performance of the underlying. The only modification to the structure then is to replace the long European call with long European put option. However, these bearish structures account only for minor proportion in the field of structured retail products.

4.2.Advanced principal protected structures

Advanced principal protected structures contain at least some additional features to basic structures. There are a wide variety of option features embedded to advanced principal protected structures. Here are presented the most common features that also can be found from the data sample.

4.2.1. Asian option

The introduction of Asian options, also known as average rate options, in the option payout formula arose as one of the most popular structures. The averaging refers to the calculation of the final index level, or in rare cases index opening values, which is made up of several observations, taken at regular intervals, as opposed to just one observation at the expiration of the option. For example, many longer dated notes might refer to final index level as being monthly averages of the index level in the final year. The averaging effectively reduces the life span of the option because observations start a full year prior to the actual expiration date. This effect reduces the option risk and price, which in turn increases the participation level of a European option. One of the possible disadvantages of the averaging is that if the market rises during the averaging period the payout will be less than comparable to European option. On the other hand, it helps to

protect against a sudden downturn of the underlying assets as they near the final determination date.

4.2.2. Call spread option

Another highly used additional feature in capital guaranteed structures is a capped call option, also known as call spread option. In principal, the redemption amount of capital guaranteed notes with embedded call options can be infinitely high. A cap reduces the maximum payout structure and therefore diminishes option exposure costs. Limiting the upside payout potential to some capped index level increases the participation rate. At the time of issuance it is purely question of outlook of future index level which is better, an uncapped lower participation rate or capped higher participation rate.

The figure 4 shows the payout profile of the capital guaranteed products with a cap in terms of underlying assets price and performance. Higher participation rate is due to capped upside performance potential. Capital guaranteed products with an embedded European capped call option can be broken down into a portfolio consisting of a zero coupon bond, long position in a European call option with a low strike price and a short position in a European call option with a higher strike price.

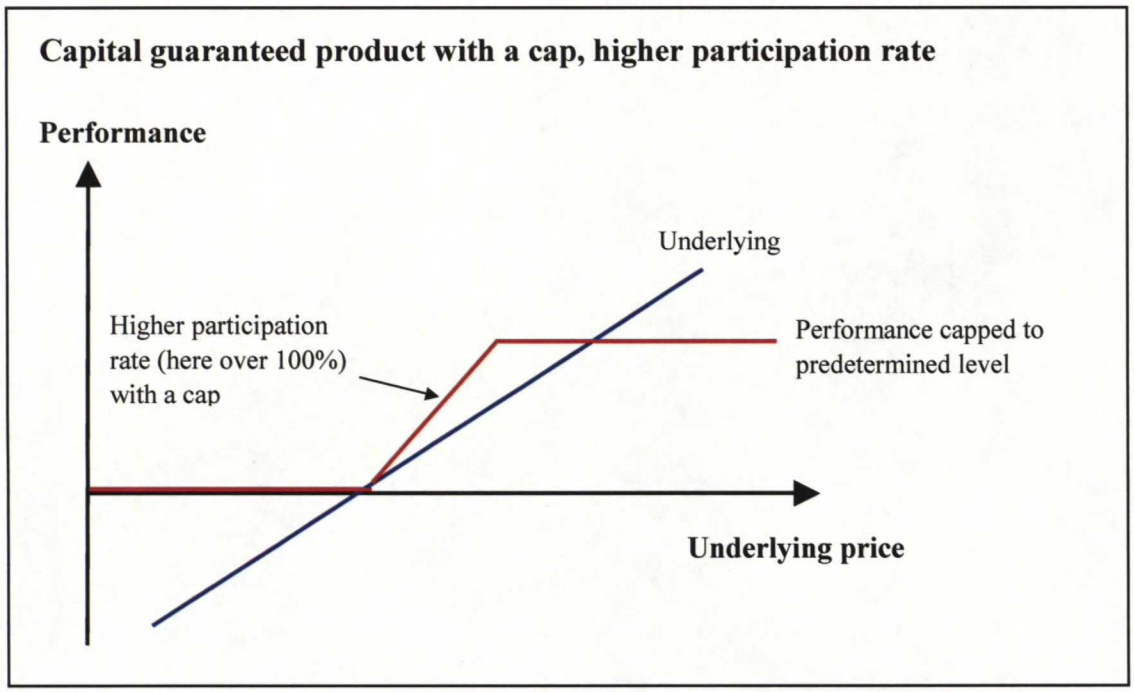

Figure 4. *Payout structure of capital guaranteed product with a cap in terms of underlying assets price and performance. Higher participation rate is due to capped upside performance potential.*

4.2.3. Forward start options

Whereas the strike price of conventional option is known from the beginning, for forward start call and put options, the strike price is not determined until later in the option period. Typically, a percentage of the underlying asset's price on a date during the option period is set as the strike price. Both the percentage and the date are fixed at the time of issue. These option features are commonly embedded to principal protected structures.

4.2.4. Cliquet option, local caps and local floors, reverse cliquet

In many cases, the redemption amount paid out on principal guaranteed products does not depend solely on the performance of the underlying asset between issue date and maturity date. It is a common feature to lock in gains made on an option at specific dates and to reset the strike price to the underlying asset's price level as of the resetting date. At maturity, these lock-in amounts are added to the guaranteed redemption amount and paid out to the investor. These consecutive call or put options are cliquet options,

also known as ratchet or reset options. When looking at these products, it is necessary to bear three things in mind (Thonabauer, 2004):

- How are the lock-in amounts calculated?
- Are the strike prices known on the date of issue, or are they fixed at a later point during the term of the instrument?
- When do the cash flows take place? What is to be done in cases where the resetting date is not the same as the payment date?

Periodic caps or local caps in cliquet structure have become a popular feature as well. Due to low interest rates lately, the more general cap structure discussed above does not yield a high enough cap level to please many investors. In an effort to increase the cap rate and keep the participation rate near 100%, the introduction of periodic caps has been appealing. As the name suggests, the caps are in place for periods within the note's term. For example, a monthly cap could be put in place whereby there is a monthly limit as how much of a gain can contribute to the option's payout. The monthly gain could be limited for instance to +3%. If the index is up 2%, it fully goes towards the option payout, but, if the index is up 5%, only the first 3% counts. One trade-off or risk is that negative monthly returns count as well, if they are not floored. A large negative move in one month could negate several positive monthly results. At the expiration of the option the monthly returns are either summed or multiplied and the option pays off that sum respectively. An advantage of this feature is that it greatly reduces the price of the option exposure such that guaranteed minimum return or coupon can often be factored in.

An additional feature to cliquet structures is the replacement of some of the best or worst values with predetermined fixed value. Some of those values can also be excluded completely from the payout structure.

Reverse cliquet refers to a form of cliquet where all negative periodic performances are deducted from the headline coupon to give the coupon level at maturity. Each periodic performance may be subject to a local floor.

4.2.5. Bull Bear and outperformance option

The payout does not need to be limited to only bullish or bearish view of the underlying performance. If the view is that underlying moves but the direction is unclear, the long straddle option strategy might fit to that market view. It is sometimes called for Bull Bear –strategy. A return is based on the percentage change of the underlying rise as well as percentage change of the fall. The participation rates for opposite directions are not necessarily the same. The payout may also be subject to cap and floor.

The payout of the structured retail note does not necessarily depend on the performance of the underlying asset; it can be subject to the outperformance of one asset over another asset. This option is known as outperformance option or Margrabe option. For example, the note pays the outperformance of Dow Jones Euro Stoxx Select Dividend 30 Index over Dow Jones Euro Stoxx 50 Index. The value of an outperformance option will largely be dictated by the historical correlation between underlyings.

4.2.6. Binary and barrier options

The bonus returns for structured principal guaranteed products with embedded binary options are calculated as follows: If the underlying asset's price is above a specified trigger level, i.e. barrier at any time during the life of the product, a fixed percentage of the principal value is credited to the investor. Binary option is also known as digital option and all-or-nothing option. The performance of the underlying asset is reflected in the note by a sudden jump in the redemption amount. The returns of these products are typically paid out at maturity.

Barrier options comes to existence, knock-in, or ceases to exists, knock-out, if the underlying trades at a predetermined level on either a fixed date or anytime during the term of the option. Depending on the underlying option structure the knock-out can cause an early redemption of the note, known as knock-out call. A rebate is also possible after knock-out. It is used for example with individual stocks being as underlying assets. If the underlying stock price rises or falls too much, i.e. knocks out of the predetermined range, a tiny rebate is given at maturity date. This option feature is

known as rebate range binary. Notes may also have no rebate after a part of option components knock-out. Touching / no-touching the barrier may also affect to the degree of participation rate. The rate could be higher or lower after event according to payout rules.

Principal protected reverse convertibles, known as semi-reverse convertibles, combine a protected principal and a down-and-out barrier option. Semi-reverse convertibles provide a high coupon if the underlying does not reach a predetermined level over the life of the instrument.

4.2.7. Ladder option

A Ladder option is a path-dependent option whose payout increases stepwise as the underlying trades upwards (or downwards) through predetermined specified barrier levels. Each time the underlying trades through a new barrier level, the option payout is locked-in at the higher level. It is a fairly common feature in underlying payout structures.

4.2.8. Rainbow-, hybrid-, best-of and worst-of options

The definition of rainbow and hybrid options differs slightly according to source. For instance, Societe Generale (2007) says that rainbow option includes only underlyings in the same asset class. If the underlyings are from the different asset class, e.g. currencies and stocks, the option is a hybrid option. Other sources I am using do not recognise the difference between rainbow and hybrid option. However, the discrepancy is minor and I utilise the Societe Generale's definition.

Rainbow option pays out the performance of a basket in which the weightings of each component are predetermined according to the ranking of the actual performance of the component. Weightings of each underlying component can be rebalanced periodically or at maturity. The weighting can be done in a way that some assets are in fact short using negative weighting. At the same time others are even more long. Some common types of rainbow options are the best-of and worst-of options. The underlyings are the

same asset class. If the option combines two or more types of underlying asset classes, it is called a hybrid option.

Best-of option's payout is linked to the performance of the best performing underlying within a basket over an agreed period of time. Worst-of option's payout is linked to the performance of one or more of the worst performing underlying assets within a basket of stocks or indexes.

Some kind of best-of or worst-of feature is also the replacement of the predetermined number of best or worst underlying asset returns with fixed value. Also the complete exclusion of those values from the payout structure can be done. This latter structure is called Atlas and belongs to the category of mountain range-options.

4.2.9. Mountain range options

Mountain range options are basically a combination of basket options and range options, two types of exotic derivatives. They include the following options (Global Derivatives, 2008): Altiplano, Annapurna, Atlas, Everest and Himalayan. These are better explained below or at glossary. Others in the family include Etna options and Kilimanjaro options.

Altiplano option pays a high coupon at maturity if none of the components in a basket falls below a predetermined barrier level. Otherwise, the return is calculated on a lower basis of coupon and/or basket performance. Near this and cliquet structure is also the payout feature that gives a fixed local value if performance of all the underlying assets have been positive compared with the previous value.

Himalaya is a structure that is a call on the average performance of the best assets within the basket. Throughout the life of the option, there are certain measurement dates where the best performer is removed from the basket for all subsequent periods. This process is continued until all the assets have been removed from the basket. The payout is the sum of all the measured returns over the life of the option.

A kind of structure near this mountain range category is a periodic examination if all the underlying stocks or indexes are at least at the starting level. If true, a fixed coupon payment is earned which is paid at that point in time or is postponed to maturity. If not true, no coupon is earned now but all missed coupons are paid at a later point in time if all underlying assets are then above starting level. If that do not happen during note's lifetime, only principal is paid at maturity.

4.2.10. Range accrual option and range note

Range accrual option, also known as corridor option, pays out a fixed return at expiration based on the number of days the underlying remains within the specified range. Range note is a structured note with the same idea. It pays a coupon for each day the underlying is within the range and nothing for those days the underlying is outside the range. The underlying can be for instance a reference interest rate, an exchange rate, index value, equity price or spread between interest rates. The range is set on a predetermined basis according to investors' requirements or it can be automatically centred on the prevailing rate at each reset date. These range notes are common interest rate structures.

4.2.11. Callable features

Callable features are mainly used in interest rate related structures but brought to light in equity-linked products as well. A callable note affords the issuer the right to call the note at predetermined points in time and price before the stated maturity date of the note. In return for this flexibility, the investor will receive greater yield usually in the form of higher participation rate. Often the price escalates over time allowing an investor to earn an attractive return if the note is called away.

4.2.12. Accumulator inverse floater and ratchet floater

Accumulator inverse floaters and ratchet floaters are interest rate-linked structured notes. Accumulator inverse floater is a target return structure which offers high fixed

coupon in the first year and coupons based on a fixed rate minus a floating rate (e.g. 6m Euribor) thereafter. The structure is usually redeemed early if a predetermined aggregate coupon is reached. Otherwise a coupon will be paid at maturity date and that will bring the total coupon to the aggregated level. In fact, it is a question of when the maturity of the note is, and investor's view of development of future floating interest rates.

Ratchet floater is a structured note paying a floating interest rate indexed on a reference rate such as Euribor. Each floating interest rate is depending on the previous interest rate paid.

4.2.13. Other utilised payout features

Principal protected structured retail notes contain also other payout features which are not mentioned yet. These features in this sub-chapter are not necessarily very often utilised, but have to be taken into account when assessing the reasonability and return potential of structured notes' terms and conditions for the investor.

Basic features include a global floor on the performance or minimum return to whole structured note's payout, other than principal protection. For instance, rules can be as follows: 5 % minimum return over note's lifetime, irrespective of the performance of the underlying assets.

Payout structure may include caps and floors to the performance of every single underlying asset, index, stock etc. Cliquet structures' possible local caps and floors and capped call are discussed, but single underlying asset's performance-specific cap and floor is first time mentioned now.

Interest rate- and credit risk -related structured products often have periodical payments, for instance, in every six months and not just at maturity. This feature lowers duration of the note and is, in general, dissimilarity between interest rate and credit risk structures compared with other categories.

Payout structure includes sometimes a variable participation rate subject to magnitude of the underlying performance. An example of this structure is springboard structure,

shown in Figure 5. The slope of the note's payout, in terms of underlying price and performance, become steeper and gentler according to extent of underlying price. Another example of this are Booster notes, which typically offer an above average return up to a certain barrier level on the upside, but not capped, while also providing a limited return based upon the downside performance.

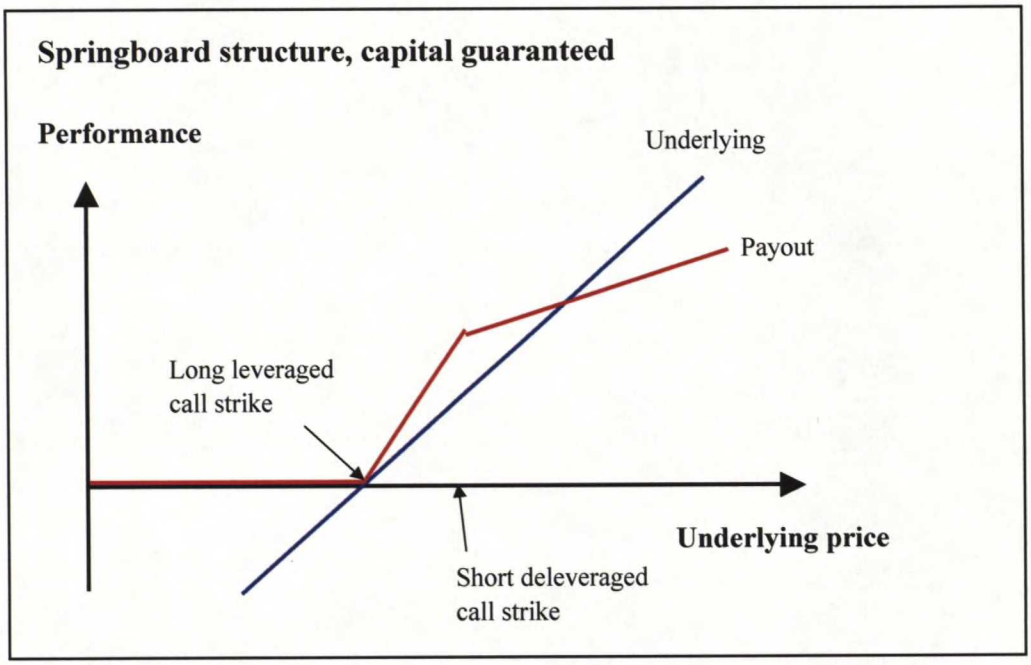

Figure 5. *The figure shows the payout of springboard structure including a variable participation rate subject to magnitude of the underlying performance.*

Structured notes' payout rules may include a fixed amount subtraction from the calculated, for instance, averaged final value of underlying asset's performance. This deduction may substantially diminish the upside return potential of the note.

Some notes, also equity related, contain a feature that the return is fixed for part of the note's lifetime. This feature seems to be somewhat similar to bonds paying a fixed coupon, differentiated only that the equity related coupons are often hold to maturity.

A kind of basket option feature is to link a yearly return to the absolute value of the least changed underlying asset's percentage change, or low minimum return. Underlying assets can be for instance 20 stocks.

4.3.Structured retail product issuances according to underlying

Traditionally, the return of an individual structured retail note was linked to percentage change of a single underlying equity index. These days' notes are increasingly diversified to contain several different indexes or underlying asset groups. Emerging equity markets, exchange rates, various types of commodities, interest rate and credit risk products, real estates, mutual funds, hedge funds, different trading strategies and discretionary asset management are now part of the underlying asset mix. In addition to this diversification, the dynamic allocation of underlying assets is a part of product range. Here are presented the most common types of underlying.

4.3.1. Equities

Structured notes whose underlying is linked to equities are called equity-linked notes. Underlying asset group of equities accounts for over 50 % of global industry production (Garidi, 2007). Underlying may be composed of a single stock, basket of stocks, an equity index or basket of equity indexes. The variety of distinct indexes ranges from traditional developped market indexes, such as S&P 500, to emerging market indexes, e.g. FTSE Xinhua China 25 or other regional indexes. Other examples of divergent indexes include sectors, like Dow Jones Stoxx 600 Healtcare Price Index and theme indexes, e.g. Credit Suisse Family Index. Individual stocks and baskets of stocks contain all conceivable types of investable stocks. In general, these stocks can be selected using same ideology and methods than investing directly to stocks.

Equity indexes utilized in structured retail products are mostly price indexes. This signifies that no cash dividend is reinvested in the index. Hence, the price index only yields the performance of stock price movements. This naturally has an effect on the return of the structured note. This method is lately questioned in context of mutual funds' benchmark indexes. However, I have not seen any discussion on the matter related to structured retail products.

4.3.2. Commodities

Commodities as underlying asset of structured retail products are one of the growth areas of exotic underlyings. A commodity can be categorized, generally speaking, as any tangible good. As underlying assets, commodities are typically metals, energy and agricultural products. Metals include precious metals and base metals. Precious metals consist of gold, silver, platinum and palladium. Base metals are e.g. copper, nickel, aluminium and zinc. Energy products used as underlying assets comprises of crude oil, electricity and natural gas. Underlying commodities may also be agricultural products such as wheat, grain, oat, corn, sugar, coffee, soyabean, beef and pork bellies. Many index providers also have their own commodity indexes which contain mixed number of commodities. An example of such is Dow Jones AIG Commodity Index, which consists of 19 distinct commodities. These and their weights as of January 2008 are presented in appendix D.

Structured notes enables retail investors to invest minor amounts in such a topical markets as commodities. The increased demand of commodities and recent uncertainty in stock markets has made this underlying asset class even more interesting. The prices of many commodities, especially agricultural products, have more than doubled in short period of time.

4.3.3. Credit risk products

Structured products whose underlying is linked to credit risk are mostly offered to institutional clients and without capital protection. However, some capital guaranteed structures are also available for retail customers. Default baskets and portfolio default swaps are examples of such. A default basket consists of some underlying credit names. The note pays periodically a spread over Euribor, e.g. 50 basis points plus 3 months Euribor quarterly. If credit events occur, the maturity of the note extends or the coupon payments are reduced or terminated.

The main alternative to baskets is the tranched portfolio default swap. These are quite similar to default baskets, differing in two ways (O'Kane, 2001): first, the size of the

underlying basket or portfolio is usually much larger, typically consisting of 40-100 credit names. Second, the redistribution of the risk is specified in terms of the percentage of the portfolio loss to which the investor is exposed, rather than the number of assets.

4.3.4. Foreign exchange rates

Retail capital protected issues of notes with foreign exchange rate derivatives are quite rare. The basic idea is that the launched note provides a participation in the potential strengthening of a currency versus another currency, for instance, euro versus the US dollar. Underlying can be a currency pair or basket of currencies. All major and liquid currencies are available for use as underlying currency pair. Notes contain often digital, range accrual and knock-in/out features.

4.3.5. Interest rates

In general, fascination for interest rate structures has been strong as the low euro rates environment increased the demand for higher yield using structured solutions. As with credit risk products, the majority of interest rate-linked products are offered to institutional clients and tailored for individual customer needs. Retail products are usually linked to 3, 6 or 12 months Euribor, or similar currency specific Libor. Some long-term swap-rates are also available. Notes usually pay higher periodical coupons than basic fixed- or floating rate notes, if certain conditions are met, to offset the higher return risk involved. These conditional periodical payments and callable features characterize products. Known retail structures are range notes, accumulator inverse floaters and ratchet floaters.

4.3.6. Trading strategies

The underlying of capital guaranteed structured retail note can even be an entire trading strategy these days. The idea is that note's return follows in a disciplined way predetermined trading strategy. The strategy can be almost any of the extensive number

of prevailing trading strategies in the world markets. The examples of such are the CPPI, Constant Proportion Portfolio Insurance and Societe Generale's WISE Long/Short.

The aim of the CPPI is to maximize the exposure to risky assets while simultaneously guarantee the stated level of capital at maturity. The strategy requires the rebalancing of the portfolio between risky assets and safe assets dynamically according to a quantitative model. Generally, the proportion of risky assets is increased when these perform well and decreased when the performance is poor.

The SGI WISE Long/Short is an index reflecting the performance of a pan-European long/short strategy. The main objective is to deliver stable returns, with a lower volatility than the European market using long and short positions on pan-European stocks. The underlying stock selection process is based on the WISE model, a proprietary model developed by the Societe Generale Quantitative Research team in 2000. Every month, the model filters out European equities with a market capitalisation above three billion euro. Each stock in the resulting screening receives a score reflecting its value and momentum characteristics. The long portfolio represents the top 10 % WISE scores while the short portfolio represents the bottom 10 % scores.

4.3.7. Mutual funds and other managed funds

Structured products industry has increased the number of underlyings by offering products exposing investors to mutual funds and other actively managed funds from asset management houses. Underlying mutual funds may contain the whole universe of different kinds of funds including fixed income, equity, property, emerging markets and hedge funds. As capital guaranteed, these products bring advantages to investors by widening the underlying product range and allowing a more conservative investment in other dynamically managed funds. An entire discretionary asset management can be included in a form of structured note. These are nowadays available also for retail customers with capital protection.

4.4.Advantages and risks of principal protected notes to retail investors

Principal protected structured retail notes have many advantages for investors. However, they contain also some risks. These risks cannot be underestimated or forgotten when chasing the better returns. These advantages and risks are discussed here.

4.4.1. Advantages of principal protected notes

Structured capital guaranteed retail products are unlike traditional investment products. Like discussed earlier, they generally consist of a mix of financial instruments, such as zero coupon bond and derivatives. There is a great deal of diversity among structured retail products, both in terms of the choice of underlying securities and in terms of the payout structure. The advantages of capital guaranteed structured products to retail investors can be seen mostly same as the advantages of structured products as a whole group of investors in earlier chapter 3.1.1. There is only some minor dissimilarity as follows:

- Higher return opportunities with limited downside risk compared with traditional fixed income investment. For risk-avoiding investors, capital guaranteed structured products offer protection against price decreases but allow the upside potential with certain degree. Of course, the capital guarantee costs something and therefore reduces the participation rate of the upside potential.

- Expand the investment possibilities. Structured products offer retail investors an opportunity to invest cost efficiently minor sums with capital protection in diverse investment possibilities such as commodities (e.g. metals, energy, agricultural products etc), emerging stock markets, currencies, interest rates, credit products, real properties, different investment strategies and hedge funds.

- Easier to diversify an investment portfolio. Structured products allow efficient portfolio allocation also for retail investors with minor sums of invested capital.

- Existing secondary market. Nowadays issuers or distributors of structured retail products provide as well secondary market prices for the notes, at least the bid-side price for their own products. Some of the notes are also listed on stock exchanges. However, trading with structured retail notes on exchanges is quite different compared with liquid stocks because there is usually no natural liquidity on the markets. The market maker quotes prices and is often the original issuer. That is why the trading does not differentiate much with initial issuer providing bid-ask quotes over-the-counter. Bid-ask spreads can be up to couple of percentage points of the price of the product. Despite the existing secondary market, structured retail notes are not designed to be liquid. They are rather intended to hold to maturity.

4.4.2. Risks related to principal protected notes

Risks related to principal protected structured products are basically the same than risks to structured products as a whole group as described in chapter 3.3. The main difference is naturally the capital protection at maturity date. That is the reason for only about 20 % of invested capital to five-year capital guaranteed structures is used for options at present interest rate levels. Other 80 % is used for zero-coupon bond. Option features can expire worthless but zero-coupon remains. Of course, the zero-coupon is also subject to issuer risk, i.e. issuer's ability to meet its obligations.

Just a moment ago, on March 16, 2008, under the supervision of the Federal Reserve, the Central Bank of United States, the Bear Stearns Companies Inc. signed a merger agreement with JP Morgan Chase under which JPMorgan Chase would assume the counterparty risk and exercise management control over Bear Stearns pending shareholder approval. This is described as the first major investment bank collapsing to subprime related woes.

In Finland, at least one smaller distributor have used Bear Stearns as an issuer of structured capital guaranteed notes. In this case, JP Morgan apparently assumes the counterparty risks of Bear Stearns. However, this occasion should remind the reality of counterparty risks. The capital protection at maturity date is always subject to issuer risk.

4.5.Structured retail products from legal perspective

The Finnish Financial Supervision Authority supervises financial markets in Finland and parties operating in these markets. One of its duties is to monitor that sound practices are observed which applies also for structured retail products. This sub-chapter describes the procedures related to prospectuses and some Finnish taxation specific peculiarities.

4.5.1. Publishing prospectuses

Publishing prospectuses is highly statutory. The following regulations are gathered from the Finnish Financial Supervision Authority's web pages (FSA, 2008).

A securities' issuer or anyone who applies for securities to be admitted to public trading is obliged to publish a prospectus. The prospectus can be published after approval by the competent authority. If the home state of the securities is Finland, the competent authority is the Finnish Financial Supervision Authority. Requirements for the contents and publication of prospectuses are harmonised across the European Economic Area (EEA).

There are two types of prospectuses: those prepared according to the prospectus directive (European passport) and those prepared according to national requirements. Under the European passport method, the issuer can use a prospectus approved by one competent authority in all EEA countries by complying with a simple notification procedure. This method is applicable to situations in which the size of the offer exceeds EUR 2.5 million, and always when admission of the securities to public trading is applied for. In the European passport method, member states cannot set further national conditions on the contents of the prospectus.

National prospectus requirements can still be applied to those securities' offers in which the total value of securities offered during the preceding 12 months is less than EUR 2.5

million. However, in this case the securities can only be offered in the state where the prospectus was approved.

The obligation to prepare a prospectus does not apply in the following situations:

- The total value of securities offered within a 12-month period is less than EUR 100,000.
- The offer is addressed solely to qualified investors, as defined in the prospectus directive.
- The offer of securities is addressed to fewer than 100 investors.
- The total consideration per investor or denomination per unit is at least EUR 50,000.

However, the obligation to prepare a prospectus also applies in the above-mentioned situations if the intention is to apply for admission of the securities to trading.

Structured retail products are usually offered under the issuer's programme for the issuance of debt instruments. In these cases, the prospectus contains programme memorandum and terms and agreements sheets of the specific note. Programme memorandum includes general rules and conditions of the programme and issuer specific information. Terms and agreements sheets contain note-specific information including payout calculation rules, underlying and maturity. Prospectus needs to be available for investors at sales office and web site during the subscription period.

Issuers or distributors also regularly compile sales brochures for marketing purposes. Brochure's content is not highly regulated but cannot be misleading or untruthful. Making an investment decision based purely on the sales brochure is not recommended.

4.5.2. Finnish taxation peculiarities

The returns of structured retail notes are levied in Finland according to same principles than other interest bearing securities. Unfortunately, one competitive advantage is given to issuers using non-Finnish issuing programs. Taxpayer, or retail investor has the right to deduct from the capital income the interest rate expenditures of a loan used for the investment, for instance structured retail note. This is applicable only if the issuer

utilizes non-Finnish issuance program. If the Finnish program is used, the return is always levied according to tax at the source of income and no expenditure deductions can be made. This is one of the main reasons why Scandinavian banks, such as Nordea and Handelsbanken began to utilize Swedish programs in Finland. Earlier this comparative advantage was given to distributors using international investment banks as issuer of the note.

5. Methodology and data description

This chapter aims to describe the methodology used in the study and description of the data. This includes the data collection process, how it is gathered and processed.

5.1.Methodology

The study aims to descriptively delineate the payout features of structured retail notes sold in the Finnish market in 2002-2007. There is no data easily available at the accessible databases; a lot of manual work is needed to collect the required information from terms and agreements sheets.

First, a number of terms and agreements sheets of issued notes are gathered. They are collected partly from the websites of the issuers or distributors and partly from the prospectus database of the Finnish Financial Supervision Authority (FSA). The sheets are collected during autumn 2007. Then the needed information is typed into Microsoft Excel and further analyzed using excel, and in more statistically demanding questions, SPSS.

Like I discussed in earlier chapter, a securities' issuer or anyone who applies for securities to be admitted to public trading is obliged to publish a prospectus. It is quite comfortable to obtain prospectuses whose are issued under Finnish programs. The prospectus hunting becomes more complicated with issuers whose prospectuses are approved elsewhere. Many of those prospectuses are difficult or almost impossible to obtain, or, require at least much effort and patience. They do not seem to be permanently available at public websites. Like mentioned earlier, also the prevailing Finnish taxation law encourages issuers or distributors to utilize notes whose are issued under foreign issuance programs

The data used in the study is gathered from 343 capital guaranteed structured note issuance's terms and agreements sheets that fulfilled the requirements of the study. The requirements include that the note is sold to retail investors in Finland and it is capital

guaranteed at maturity. The capital protection of the note needs to be at least 80% of the subscription price at maturity date. This means that if the note is matured at par value, the initial subscription price cannot be more than 125 % of the par (100 / 125 = 80 %). Otherwise the issue is excluded. The reason for the desertion is that I am looking for capital protected segment in the study. The initial subscription price of 125 % is pure exception, containing only one note. The next highest subscription prices in the data sample are 115% of the par value, comprising three notes. The number of issued notes increases while the subscription price comes closer on the par value. All private issues are also excluded. All notes in the data sample are issued between November 2002 and October 2007.

In some tables and figures, the only note in the data sample issued at 2002 is moved to the combination of years 2002 and 2003. The note in question is issued at late November 2002; therefore it is already quite close to year 2003 and does not deviate the results substantially.

The notes' underlying equity assets are divided into developed, emerging and combination of both markets' assets according to their country of location. The splitting is done utilizing the Morgan Stanley Capital International's Emerging Market Index classification as of July 2006 (The MSCI Emerging Markets Index, 2008). Another used classification is from The Economist Newspaper. The difference between Morgan Stanley and The Economist's classifications, which relates this study, is the definition of Hong Kong and Singapore. Morgan Stanley classifies them as developed markets while The Economist as emerging markets. Complete list of utilized underlying equity assets and their splitting between developed and emerging markets is shown in appendix B.

The distributed structured retail notes are grouped into two tranches according to their payout features. The tranches are traditional and complex. The traditional group contains notes whose return is linked to a single index, indexes, single stocks or basket of stocks. The payout features in traditional group may also contain Asian option, i.e. averaging period, or return calculation can be from a single observation date. The complex group includes also other than traditional features. The averaging feature is

forced to take a part of the traditional group. Otherwise the number of notes with single observation date in traditional group is limited to three notes.

The use of Asian option, i.e. average option, increases the effective lifespan from which the note's payout is calculated. This means that the final value of the underlying assets is not calculated from the final observation date just before note's maturity. The payout depends on the average values of the underlying on a predetermined series of dates. The option is cheaper than using plain vanilla options, since the averaging process offsets high values with low ones and therefore lowers volatility and premium. For instance, a five-year note whose final value of underlying is calculated using average values of yearly-observations, is in fact using effectively third year's value of underlying in payout calculation, not the final observation from year five. This can be illustrated by thinking the final value as the sum of each year's end value divided by number of years ((1+2+3+4+5) / 5 = 3). The final value is third year's value, on average. Another example, a five-year note using average values from end of years 4 and 5; the final value's point in time is 4,5 years ((4+5) / 2 = 4,5). The final value's point in time divided by the notes maturity describes proportionally the effective point in time from which the final value is calculated. In the first example above the result is 60% (3/5) and in the second 90% (4,5/5). Higher the percentage value, better for the buyer of the note, other things being equal. This method is used when I compare the payout calculation's effective point in time to maturities of the notes.

5.2.Description of the data

The data used in the study is collected from 343 capital guaranteed retail structured note issuance's terms and agreements sheets that fulfilled the requirements of the study. Terms and agreements sheets contain all the details of the issue that investors should be aware of.

The gathered information from terms and agreements sheets includes the following information among others: distributor, issuer, name of the note, payment-, pricing- and maturity dates, issue price, minimum issue amounts and commissions, underlying

assets, averaging periods on the final value calculations and diverse types of notes' payout features. These are later analysed more carefully in results chapter.

The data, regardless of hard work collecting terms and agreements sheets, does not cover all the retail capital guaranteed issues in Finland during the time period. For instance, the latest issue of one of the major issuer in Finnish market, Nordea bank, is from the January 2007. After that Nordea began to utilize its Swedish MTN Program. The sheets are not easily available on Nordea's website nowadays. They are accessible only at subscription periods.

Table 2 shows the number of capital guaranteed structured notes per distributor and issuer. Distributor refers to the seller of the structured retail note. Distributor can also be the issuer but not necessarily. The table is compiled in a way that a note can be in the distributor list only once although there are couples of distributors in the case of all Municipality Finance and the Mortgage Society of Finland issued notes. These notes are not private labeled i.e. other sellers are not selling the note under their own name and brand but under issuers' name. For instance, FIM Group have sold 35 private label notes which all are issued by Credit Suisse although FIM is also the distributor of one of the Municipality Finance issued note. That is why number of issued and distributed notes is the same, 343 notes. United Bankers and FIM Group are private labeling other issuers' notes. Municipality Finance and the Mortgage Society of Finland are issuers and distributors but use also other channels to distribute their notes. Svenska Handelsbanken is the issuer of all the United Bankers' distributed notes.

Number of capital guaranteed structured note issues per distributor / issuer

Distributor	%	Issuer	%	
85	24,8 %	85	24,8 %	Nordea Bank Finland Plc
55	16,0 %	55	16,0 %	OKO Bank Plc (Now Pohjola Bank Plc)
41	12,0 %	41	12,0 %	Bank of Åland Plc
38	11,1 %	56	16,3 %	Svenska Handelsbanken Ab
18	5,2 %			United Bankers Asset Management Ltd
		35	10,2 %	Credit Suisse International
35	10,2 %			FIM Group Corporation (now member of Glitnir Group)
18	5,2 %	18	5,2 %	Aktia Savings Bank Plc
17	5,0 %	17	5,0 %	Sampo Bank Plc & Mandatum Private Bank (now members of Danske Bank)
		16	4,7 %	Municipality Finance Plc
13	3,8 %			Municipality Finance Plc & eQ Bank Ltd.
1	0,3 %			Municipality Finance Plc & FIM Group & Head Asset Management
1	0,3 %			Municipality Finance Plc & Nordea Bank Finland Plc
1	0,3 %			Municipality Finance Plc & Sampo Bank Plc
13	3,8 %	13	3,8 %	Scandinaviska Enskilda Banken (incl. SEB Gyllenberg)
5	1,5 %	5	1,5 %	Evli Bank Plc
		2	0,6 %	The Mortgage Society of Finland Group
2	0,6 %			The Mortgage Society of Finland Group & Nordea Bank Finland Plc
343	100,0 %	343	100,0 %	

***Table 2**. The table shows the number of note issuances per distributor and issuer. It can be seen that Nordea Bank is the largest issuer and distributor followed by OKO Bank, Bank of Åland and Svenska Handelsbanken. FIM Group distributes Credit Suisse's issued notes while Handelsbanken is the issuer of all United Bankers' distributed notes.*

Table 2 also shows that Nordea Bank is the largest issuer and distributor in the sample in terms of number of issues. Second largest distributor is OKO Bank followed by Bank of Åland, Svenska Handelsbanken and FIM Group. There are totally 12 different distributors using their own brand and name in the notes and 11 different issuers. Credit Suisse is the only issuer without distributing its own notes. Figure 6 demonstrates illustratively the proportion and number of the sold notes per distributor. The Municipality Finance is treated as single distributor although it has utilized other distributors as well, as can be seen in Table 2.

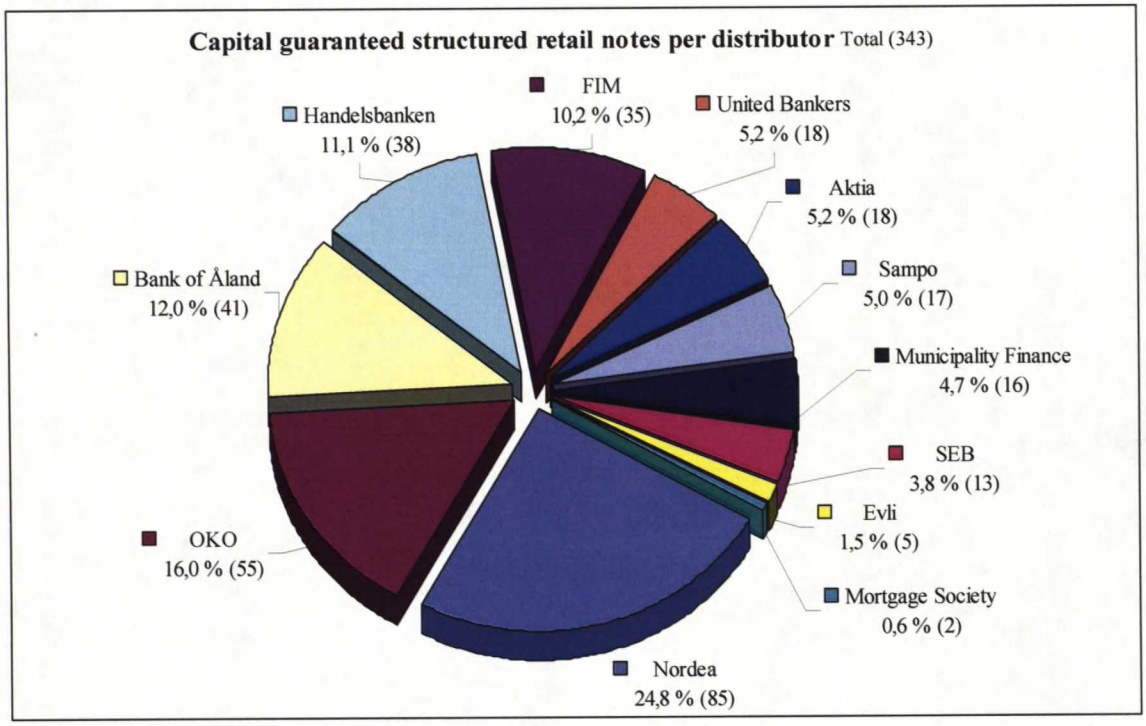

Figure 6. *The figure shows the proportion and number of sold notes per distributor. Nordea Bank is the largest distributor with 25% proportion. Seven smallest distributors' share of notes is quite the same than the one largest'. Three largest distributors accounts for over 50% of notes while five largest almost 75%.*

Figure 7 describes the capital guaranteed retail note issuances, used in the study, according to underlying. It can be seen that equity related underlying assets cover the majority, 264 of 343, or 77% of issuances. The equity part is later divided into emerging and developed markets using Morgan Stanley grouping as of June 2006. Almost 70 % of equity related issues are using wholly developed market underlyings while over 30 % are at least partly using emerging markets underlyings. Mixed part is the second popular with 8,2% of issues. It consists of underlying assets from at least two different classes. The third often-used class is interest rate structures followed by currencies and commodities. Also complex predetermined strategies, credit products and hedge funds are available with capital protection for retail investors through structured notes.

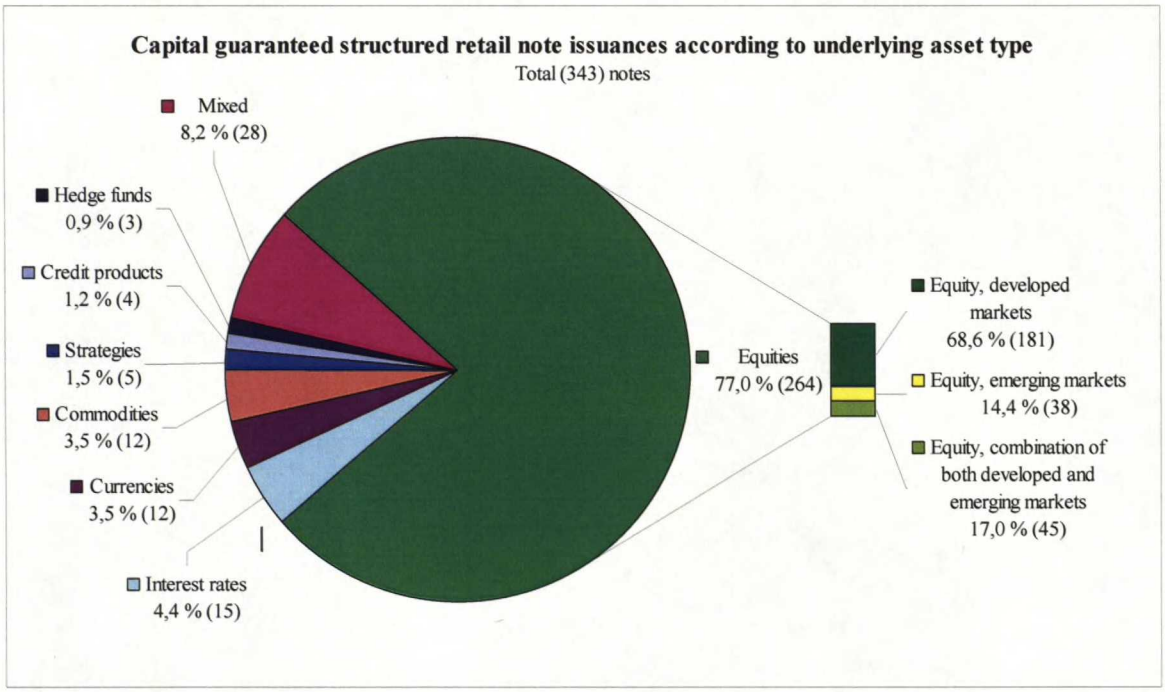

Figure 7. *The figure describes the proportion and number of capital guaranteed retail note issuances according to underlying. Equity related underlying assets cover the majority, 264 of 343, or 77% of issuances. Over 31 % of equity issuances use at least partly emerging market assets as underlying. Mixed asset type is the second popular with 8,2% of issues. It consists of underlying assets from at least two different classes. The third often-used class is interest rate structures followed by currencies and commodities.*

Figure 8 presents the number of notes in the data sample according to year of issue and underlying type. Year of issue means the last payment date. In most cases the subscription period may last many weeks before the last payment date which is non-interest-bearing time for the investor. The most frequent year of note issuances in the sample is 2006 which accounts for 104 of 343, or 30 % of the total number of issues, the second frequent year is 2005 followed by 2004. This cannot be seen a way that number of issues has decreased from year 2006 to 2007. Year 2007 is covered only partly and majority of Nordea´s notes are absent due to issuance under Swedish MTN program.

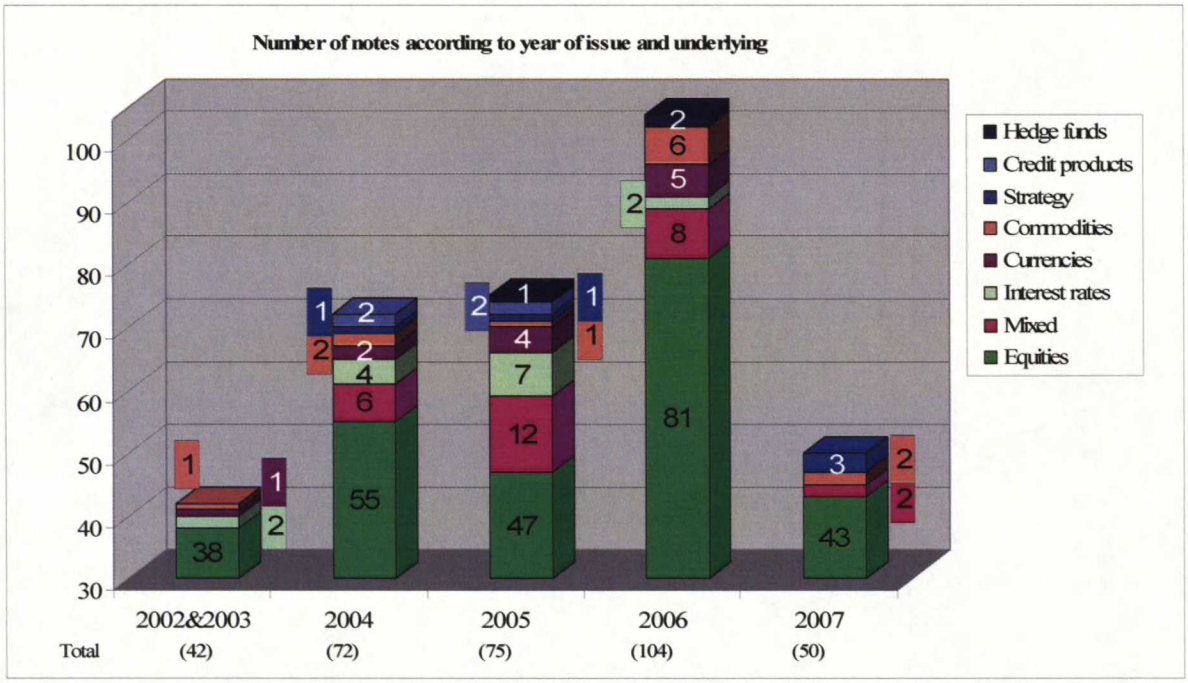

Figure 8. *The figure presents the number of notes in the data sample according to year of issue and underlying type. The most frequent year of issuances is 2006 which accounts for 104 of 343, or 30 % of the total number of issues. The second frequent year is 2005 followed by the year 2004. Equities proportion was over 90% in 2002&2003 (38/42). The drop in the number of issued notes in 2007 does not mean that the actual number of issued notes is decreased. Year 2007 is covered only partly and majority of Nordea´s notes are absent due to issuance under Swedish MTN program. Please notice the number of notes in y-axis does not begin from zero in this figure. The number of equity-underlyings is substantial compared to other underlyings.*

6. Results and analysis

This chapter aims to describe in more detailed way the characteristics of the structured retail notes sold in Finland between 2002 and 2007. This is done through analyzing the entire data sample at first and then dividing it into many sub-groups according to underlying assets and related option features.

6.1.Analyses of the entire data sample

The different kinds of underlying assets are first analyzed in terms of separate distributors. Time to maturity of the notes and the influence of callable features and Asian options are further analyzed. The division between traditional and complex payout features is conducted.

6.1.1.Distinct underlying assets and their use by distributors

There are totally eight different underlying asset classes in the study. Table 3 describes the number of sold notes and proportion in terms of underlying asset type and distributor. Some characteristics are conceivable to find from the table. Proportion of equities per distributor is highly correlated with the proportion of total number of notes, correlation being 0,987. This tells that distributors sell equity-notes in quite the same proportion than all notes. However, this is not very surprising because equity-notes cover 77% of all notes. The same kind of correlation is not found from the other underlying groups. In strategies category, correlation is even slightly negative, -0,07. There are only five notes in that category and 80% of them are Sampo Bank's notes while Sampo distributes only 5% of all notes.

Credit linked notes are distributed only by Nordea Bank and Svenska Handelsbanken. Both of them have sold two credit linked notes. FIM Group accounts for slightly over 10% of the total number of notes but is the only one using hedge funds as underlying asset type for retail investors. FIM has used hedge funds as underlying three times.

Figure 9 describes illustratively how the different underlying assets are utilized among distributors. Nordea and OKO distributed almost three quarters of interest rate-linked notes while Aktia sold commodity-linked notes proportionally over three times more compared with its proportion of all distributed notes. FIM Group and Handelsbanken distributed both eight notes with mixed-group underlying assets. It represents almost 60% of all mixed assets notes while together FIM Group's and Handelsbanken's proportion of all notes is slightly over 20%.

Number of distributed notes and proportion in terms of underlying asset type and distributor

	Equities	% of all Equities	**Mixed**	% of all Mixed	**Interest rates**	% of all Interest rates	**Currencies**	% of all Currencies	**Commodities**	% of all Commodities	**Strategies**	% of all Strategies	**Credits**	% of all Credits	**Hedge funds**	% of all Hedge funds	**TOTAL**	% of all distributed notes
Aktia Savings Bank	14	5,3	0	0,0	2	13,3	0	0,0	2	16,7	0	0,0	0	0,0	0	0,0	18	5,2
% of all Aktia's notes	77,8		0,0		11,1		0,0		11,1		0,0		0,0		0,0		100	
Evli Bank	4	1,5	0	0,0	0	0,0	0	0,0	1	8,3	0	0,0	0	0,0	0	0,0	5	1,5
% of all Evli's notes	80,0		0,0		0,0		0,0		20,0		0,0		0,0		0,0		100	
FIM Group	23	8,7	8	28,6	0	0,0	0	0,0	1	8,3	0	0,0	0	0,0	3	100,0	35	10,2
% of all FIM's notes	65,7		22,9		0,0		0,0		2,9		0,0		0,0		8,6		100	
Mortgage Society (&other)	2	0,8	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	2	0,6
% of all MS's notes	100,0		0,0		0,0		0,0		0,0		0,0		0,0		0,0		100	
Municipality Finance (&others)	14	5,3	0	0,0	0	0,0	1	8,3	1	8,3	0	0,0	0	0,0	0	0,0	16	4,7
% of all MF's notes	87,5		0,0		0,0		6,3		6,3		0,0		0,0		0,0		100	
Nordea Bank Finland	64	24,2	2	7,1	6	40,0	6	50,0	5	41,7	0	0,0	2	50,0	0	0,0	85	24,8
% of all Nordea's notes	75,3		2,4		7,1		7,1		5,9		0,0		2,4		0,0		100	
OKO Bank	44	16,7	5	17,9	5	33,3	0	0,0	0	0,0	1	20,0	0	0,0	0	0,0	55	16,0
% of all OKO's notes	80,0		9,1		9,1		0,0		0,0		1,8		0,0		0,0		100	
Sampo Bank & Mandatum	10	3,8	1	3,6	1	6,7	1	8,3	0	0,0	4	80,0	0	0,0	0	0,0	17	5,0
% of all Sampo's notes	58,8		5,9		5,9		5,9		0,0		23,5		0,0		0,0		100	
SEB & Gyllenberg	12	4,5	0	0,0	0	0,0	1	8,3	0	0,0	0	0,0	0	0,0	0	0,0	13	3,8
% of all SEB's notes	92,3		0,0		0,0		7,7		0,0		0,0		0,0		0,0		100	
Svenska Handelsbanken	24	9,1	8	28,6	1	6,7	1	8,3	2	16,7	0	0,0	2	50,0	0	0,0	38	11,1
% of all SHB's notes	63,2		21,1		2,6		2,6		5,3		0,0		5,3		0,0		100,0	
United Bankers	17	6,4	0	0,0	0	0,0	1	8,3	0	0,0	0	0,0	0	0,0	0	0,0	18	5,2
% of all UB's notes	94,4		0,0		0,0		5,6		0,0		0,0		0,0		0,0		100,0	
Bank of Åland	36	13,6	4	14,3	0	0,0	1	8,3	0	0,0	0	0,0	0	0,0	0	0,0	41	12,0
% of all BoÅ's notes	87,8		9,8		0,0		2,4		0,0		0,0		0,0		0,0		100,0	
TOTAL	264	100,0	28	100,0	15	100,0	12	100,0	12	100,0	5	100,0	4	100,0	3	100,0	343	100,0
% of all distributed notes	77,0		8,2		4,4		3,5		3,5		1,5		1,2		0,9		100,0	
Correlation between asset type and total	0,987		0,500		0,819		0,720		0,649		-0,066		0,648		0,085		1,000	

Table 3. *The table describes the number of sold notes and proportion in terms of underlying asset type and distributor. Proportion of equities per distributor is highly correlated with the proportion of total number of notes, correlation being 0,987. However, it is not very surprising because equity-notes cover 77% of all notes. The same kind of correlation is not found from the other underlying groups. In strategies category, correlation is even slightly negative, -0,07. There are only 5 notes in that category and 80% of them are Sampo Bank's notes while Sampo distributes only 5% of all notes. The figures of this table are further analyzed in following figures 9 and 10.*

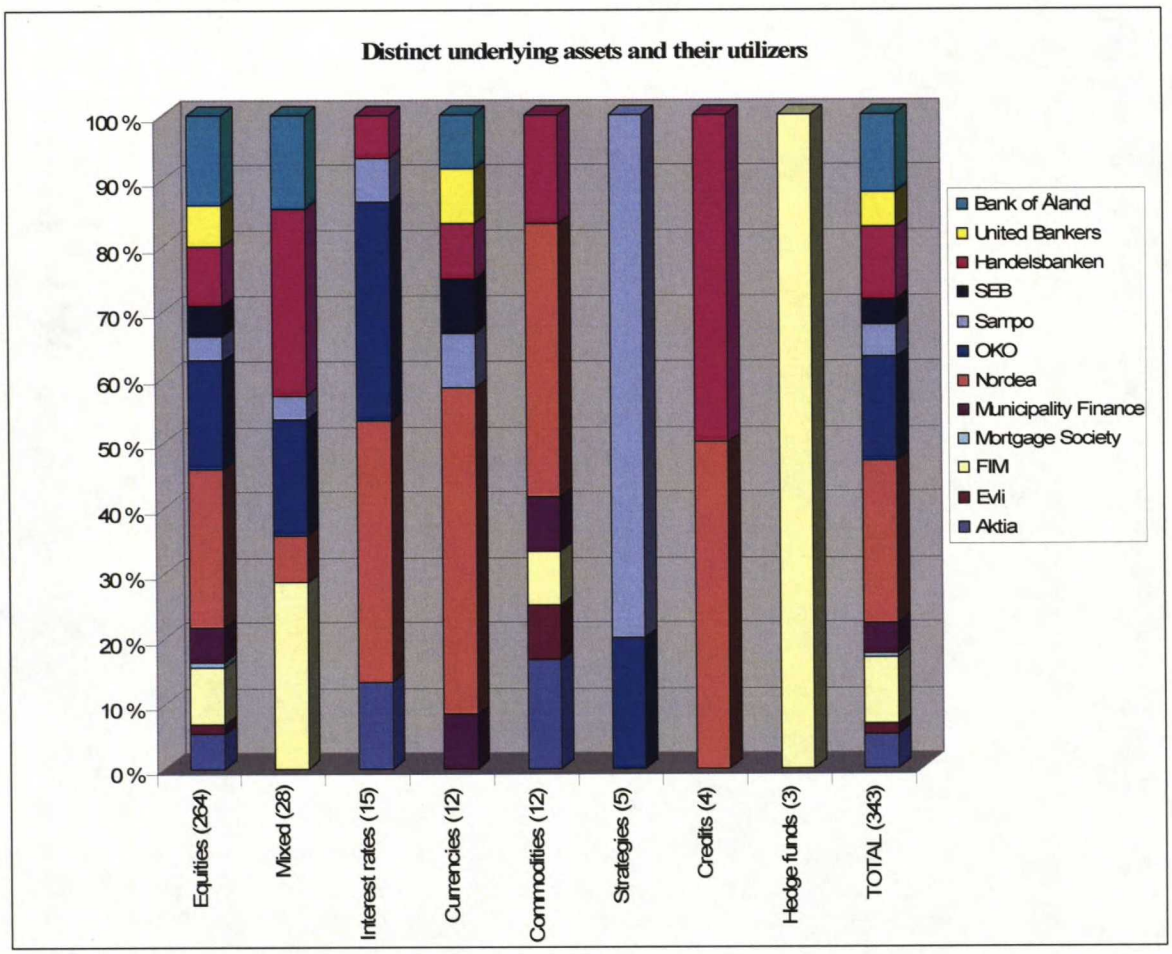

Figure 9. *The figure describes illustratively how the different underlying assets are utilized among distributors. FIM accounts for slightly over 10% of the total number of notes but is the only one using hedge funds as underlying asset type for retail investors. FIM has used hedge funds as underlying three times. There are five notes in strategies category and 80% of them are Sampo's notes while Sampo distributes only 5% of all notes. Credit linked notes are distributed only by Nordea and Handelsbanken. Both of them have sold two credit linked notes. FIM and Handelsbanken distributed both eight notes with mixed-group underlying assets. It represents almost 60% of all mixed assets notes while together FIM's and Handelsbanken's proportion of all notes is slightly over 20%. The columns of equities and total are very similar with correlation of 0,987 as noted in table 3.*

Figure 10 describes the proportion of underlying assets per distributor. Number of distributed notes is in brackets after the distributors' name. It shows that Sampo uses proportionally least the equity underlyings while it clearly uses the most of strategy-notes. Both and all of the notes distributed by Mortgage Society are equity-linked notes. FIM and Handelsbanken distributed quite many mixed-group notes compared to average (total).

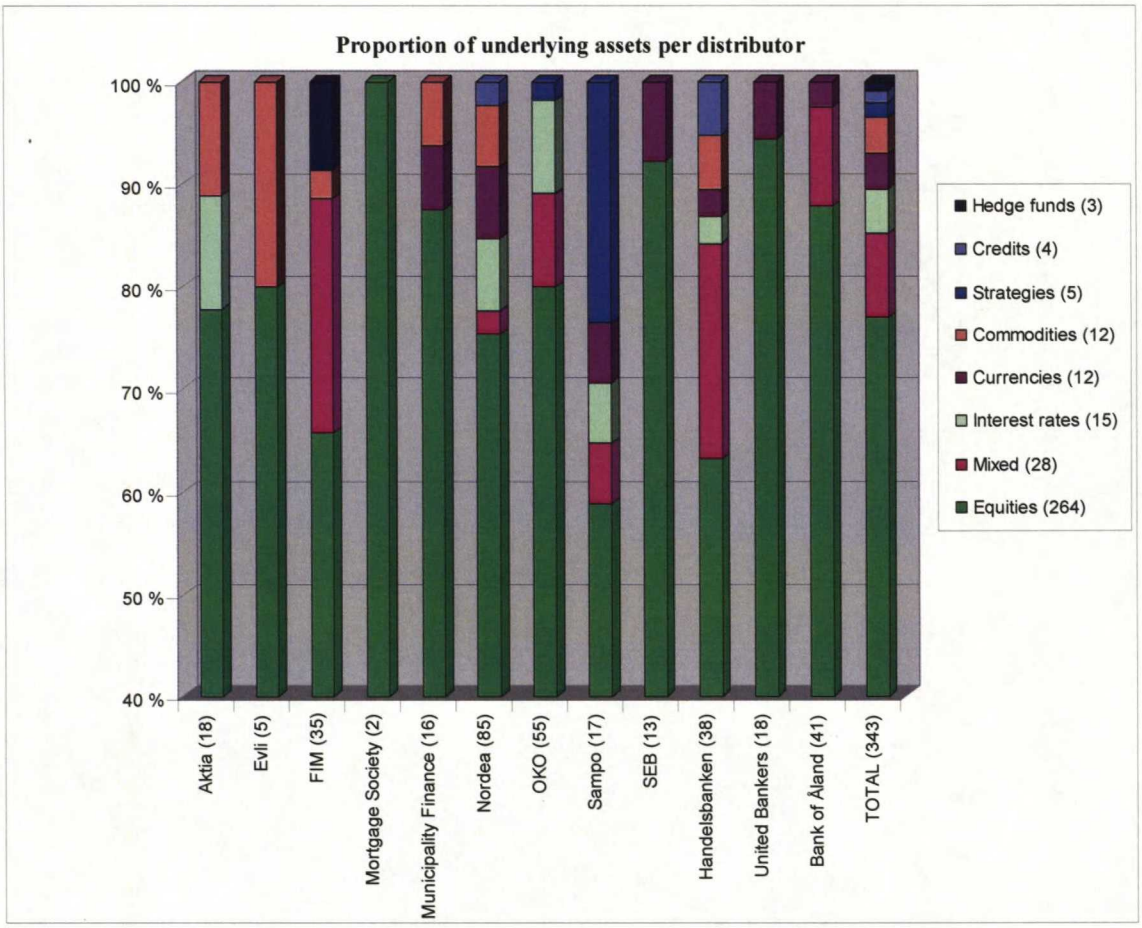

Figure 10. *This figure describes the proportion of underlying assets per distributor. Number of distributed notes is in brackets after the distributors' name. It shows that Sampo uses proportionally least the equity underlyings while it clearly uses the most of strategy-notes proportionally. All of the notes distributed by Mortgage Society are equity-linked notes. FIM and Handelsbanken distributed quite many mixed-group linked notes compared to average (total). Please notice the y-axis does not begin from the zero in this figure.*

6.1.2. Time to maturity of the notes and the influence on callable features

Table 4 describes the term-to-maturity at issuance. The average of maturity of whole sample is 4,5 years. That is more than in studies described at chapter 2, Literature review. Henderson and Pearson (2007) study's average term-to-maturity is 3,2 years, closest to this study's average. Stoimenov and Wilkens (2005) have averaged term-to-maturity of 1,47 years, with the majority of products (86%) having lifetimes ranging from 1 to 2 years. Burth et al. (2001), Wilkens et al. (2003) and Baule et al. (2007) all have averaged term-to-maturities of 1,1 years. The difference between averaged

maturities is probably due to this study's limitation to capital protection and retail segment. Other studies do not have exactly same selection criteria. Henderson and Pearson divide the payout profiles into concave and convex. Concave has an average maturity of 1,3 while convex 5,9 years. Convex payout profiles are mostly described as capital guaranteed while concave profiles are usually not. Differences between markets conditions (size, costs of issue, popularity, transparency etc.) in Finland, Germany, Switzerland and U.S. may also have an effect on averages.

Term-to-maturity in various underlying asset categories in years

	All categories	Equities	Mixed	Interest rates	Currencies	Commodities	Strategies	Credits	Hedge funds
Average	4,50	4,43	5,19	5,22	2,72	4,40	5,65	5,07	5,18
Min	1,08	1,51	3,62	1,08	1,95	3,51	4,06	5,00	5,18
Max	10,01	10,01	7,06	10,01	5,00	5,07	7,06	5,15	5,19
Median	5,00	5,00	5,06	5,02	2,05	4,51	6,01	5,07	5,18
Std	1,30	1,22	0,67	2,32	1,13	0,67	1,14	0,08	0,00
Number of issues	343	264	28	15	12	12	5	4	3

Table 4. *The table describes the term-to-maturity of various underlying asset categories at issuance. The average of maturity of all categories is 4,5 years. The averages and medians seem to be quite the same, around five years, except currencies-group. Its average of 2,7 and median of 2,1 years differs clearly from other groups. Maximum term-to-maturity fluctuates from 5 to 10 years while minimum from 1 to 5 years. Standard deviation varies between 0 and 2,3 years. Standard deviation of zero comes from hedge funds as underlying assets. There are only three notes in that category.*

When looking at different asset categories, the averages and medians seem to be quite the same, around five years, except currencies-group. Its average of 2,7 and median of 2,1 years differs clearly from other groups. Maximum term-to-maturity differs from 5 to 10 years while minimum from 1 to 5 years. Standard deviation varies between 0 and 2,3 years. Standard deviation of 0 comes from hedge funds as underlying assets. There are only three notes in this category, all distributed by FIM using same issuer Credit Suisse. However, the number of issues in other than equity and mixed assets categories is quite small and for that reason the values are easily subject to changes.

If the notes with callable features (callable or knock-out call, 13 notes or 3,8%) are excluded, the average maturity shortens a bit from 4,50 to 4,44 years in category of all notes. Nine of the thirteen (69%) excluded notes are from interest rate-category, two from currencies and one from both equities and commodities categories. Number of

notes in interest rate-category diminishes drastically from 15 to 6 (60%). Average maturity of interest rates-group shortens to 4,20 years, over a year from 5,22 years and standard deviation increases from 2,32 to 3,29 years. Currencies-group values are also exposed to changes. Average term-to-maturity diminishes from 2,72 to 2,27 years and maximum from 5 to 3,1 years. It can be discussed how the notes with callable features should be treated in terms of maturity, but for instance, they are not like floating rate notes with expensive extension period if not called. In addition, eight of them have either accumulated return barrier or they are accumulated inverse floaters. The definitive maturity date is not know in advance. In the table 4, they are treated as maturing at the latest possible maturity date.

6.1.3. Effect on Asian options to return calculation

The use of Asian option, i.e. average option, increases the effective lifespan from which the note's payout is calculated. This means the final value of the underlying assets is not calculated from single final observation date just before note's maturity. The payout depends on the average values of the underlying on a predetermined series of dates. For instance, a five-year note whose final value of underlying is calculated using average values of yearly-observations, is in fact using effectively third year's value of underlying in payout calculation, not the final single observation from year five. Table 5 shows that 223 notes of 343 total, or 65%, utilizes Asian options. The use of them reduce the effective final value calculation's averaged point in time to 71% of the notes maturity, fluctuating from 70,1% in equities category to strategies' category of 90%. Investor is buying on average 4,7 years time to maturity note while receives effectively on average only 3,3 years return when averaging is used.

The final value calculation's averaged point in time divided by the notes maturity describes proportionally the effective point in time from which the final value is calculated. Higher the percentage value, better for the buyer of the note, other things being equal. This method is used in table 5 and figure 11.

Term-to-maturity of notes vs. effective final value calculation's point in time utilizing Asian options in years						
	All categories	Equities	Mixed	Commodities	Strategies	Hedge funds
Average time to maturity of notes with Asian option features	4,69	4,66	5,04	4,28	5,57	5,18
Effective final value calculation's point in time utilizing Asian options	3,33	3,26	3,68	3,40	5,01	3,80
Proportion of effective final value calculation's point in time divided by maturity of notes	71,0 %	70,1 %	73,0 %	79,4 %	90,0 %	73,2 %
Number of issues	223	189	19	10	2	3

Table 5. *Table describes the time to maturity of notes vs. effective final value calculation's point in time. 223 notes utilizes Asian option which reduces the effective final value calculation's averaged point in time to 71% of the notes maturity, fluctuating from 70,1% in equities category to strategies' category of 90%. Higher the percentage value, better for the buyer of the note, other things being equal. Investor is buying on average 4,7 years time to maturity note while receives effectively on average only 3,3 years return when averaging is used.*

Figure 11 presents the proportion of the effective final value calculation's point in time divided by the maturity of the notes utilizing Asian options in distinct underlying asset categories by distributors. It shows that on average, Handelsbanken is the most generous distributor in terms of notes averaging period. Its effective final value calculation's point in time divided by the maturity of the notes is highest, over 90%. This applies also for equities and commodities categories. SEB (Scandinaviska Enskilda Banken) utilizes on average, the lengthiest averaging period and therefore receives the lowest effective final value calculation's point in time figures. FIM Group uses, on average, second worst averaging period terms for the buyer of the note. Aktia utilizes the worst conditions in the underlying group of equities. All in all, this figure clearly shows that there are differences in notes' averaging terms between distributors. The comprehensive table of values used in table 5 and figure 11 is in appendix E.

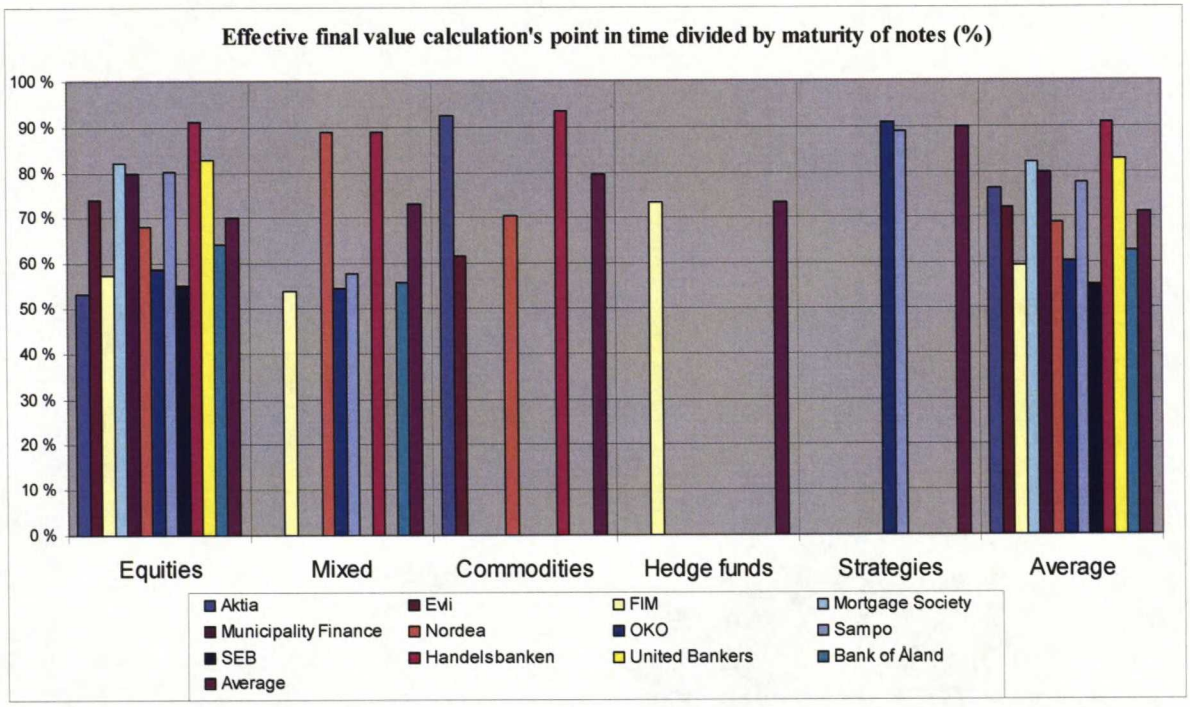

Figure 11. *The figure presents the proportion of the effective final value calculation's point in time divided by the maturity of the notes in distinct underlying asset categories by distributors. Higher the percentage value, better for the buyer of the note, other things being equal. It shows that on average, Handelsbanken is the most generous distributor in terms of notes averaging period. Its effective final value calculation's point in time divided by the maturity of the notes is highest, over 90%. This applies also for equities and commodities categories. SEB utilizes on average, the lengthiest averaging period and therefore receives the lowest effective final value calculation's point in time figures. FIM Group uses, on average, second worse averaging period terms for the buyer of the note. Aktia utilizes the worst conditions in the underlying group of equities. All in all, this figure clearly shows that there are differences in notes' averaging terms between distributors in the used data sample.*

The third hypothesis is related to this issue. All the results of hypotheses are better shown in Appendix H.

H3: *There are differences, utilizing Asian options, on the effective point in time from which the payout's final value is calculated compared to notes' maturity between distributors vs. others on average.*

The null hypothesis is the assumption that no difference exists between the two groups, SEB's proportion of 55,2% and the average without SEB, which is 71,9%. The null

hypothesis is rejected. The same applies for the proportion of Handelsbanken, 90,8% and the average without Handelsbanken, 67,6%. This means that there are statistically significant differences between distributors' use of Asian averaging periods.

6.1.4. Division of notes into traditional and complex-groups

The distributed notes are grouped into two tranches according to their payout features. The tranches are traditional and complex. The traditional group contains notes whose return is linked to a single index, indexes, single stocks or basket of stocks. The payout features in traditional group may also contain Asian option, i.e. averaging period of final value, or return calculation can be observed from a single date. The complex group includes also other than traditional features. The Asian option needed to take a part to the traditional group because otherwise the numbers of notes with single observation date in traditional group is limited to three. Structured notes' payout calculation is divided into 39 different features. These features are recited as a list in Appendix A, and are better described in chapter 4.2. 'Advanced principal protected structures'.

The number of traditional and more complex notes and proportion in terms of year of issuance and distributor are presented as numbers in Appendix F. Figure 12 shows the total proportion of complex and traditional notes per distributor. On average, proportion of traditional notes is 44,3% and complex 55,7%. As we can see from the figure, FIM uses clearly much more complex features than on the average. 89% of the notes FIM distributes belong to this category. On the other hand, 83% of United Bankers' notes are traditional. Over 70% of the notes distributed by Aktia, OKO and Sampo belong to complex group while over 60% of the notes distributed by Nordea and SEB are traditional. Handelsbanken's notes are proportionally very near the average, the difference is less than half percentage units.

The second hypothesis covers this particular issue. All the results of hypotheses are better shown in Appendix H.

H2: *There are differences between distributors utilizing more or less complex calculation features than others on the average.*

The null hypothesis is the assumption that no difference exists between the two groups, FIM's proportion of complex notes 88,6% and the average without FIM, which is 51,9%. The null hypothesis is rejected. The same applies for the complex proportion of UB, 16,7% and the average without UB, 57,8%. This means that there are statistically significant differences between distributors' notes.

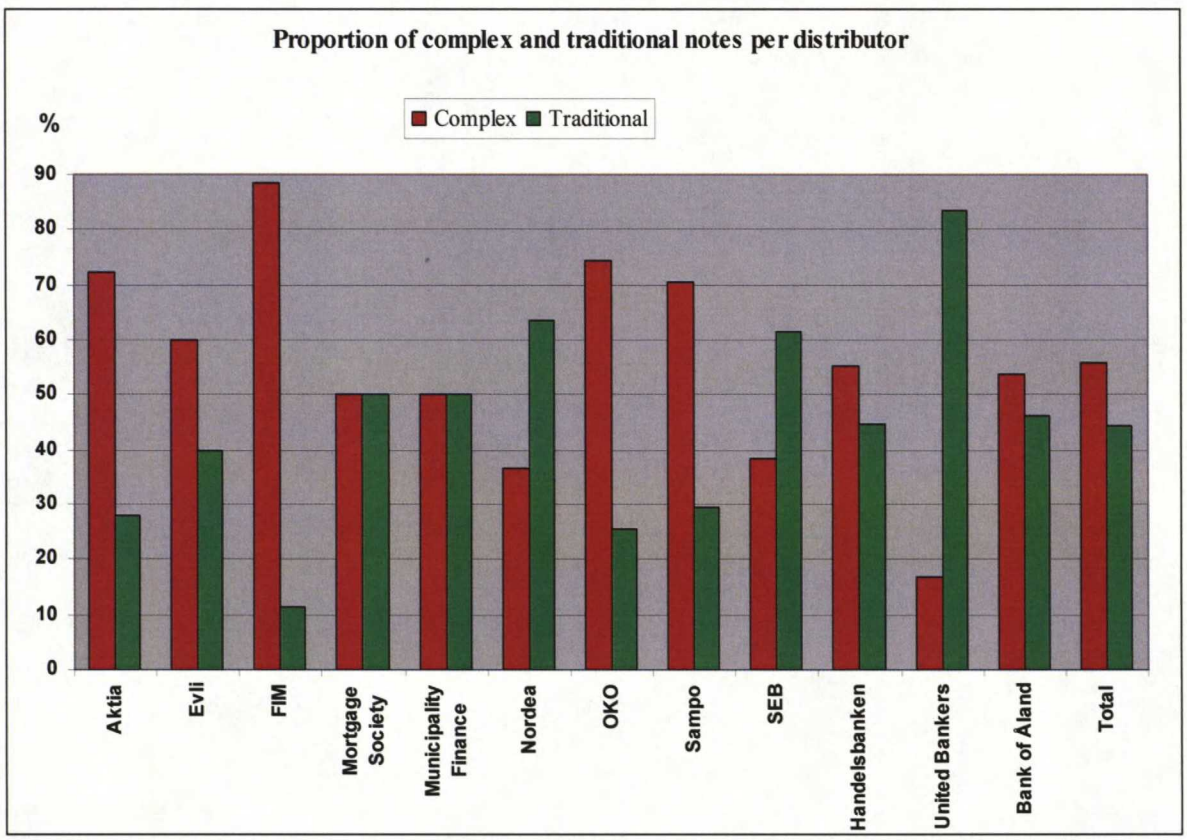

Figure 12. *The Figure shows the total proportion of complex and traditional notes per distributor. On average, proportion of traditional notes is 44,3% and complex 55,7%. As we can see from the figure, FIM uses clearly much more complex features than on the average. 89% of the notes FIM distributes belong to this category. On the other hand, 83% of United Bankers' notes are traditional. Over 70% of the notes distributed by Aktia, OKO and Sampo belong to complex group while over 60% of the notes distributed by Nordea and SEB are traditional. Handelsbanken notes' are proportionally very near the average, the difference is less than half percentage units.*

Table 6 presents the number of notes and proportion in terms of different payout structures and distributor. Previous figure 12 showed that FIM's notes are mostly complex. This table shows the named strategies, which are distributed, and the number of the notes and their proportion of the distributor's notes. For instance, 16 notes or 46% of FIM's notes contain ladder options, 13 notes or 37% best of- or worst of options and 11 notes or 31,4% are cliquet or reverse cliquet structures. The table also shows that FIM's ladder structured notes represents 62% of all distributed ladder notes.

Another interesting point in this table is the United Bankers' number of distributed notes and their proportion. Figure 12 showed that United Bankers' notes are mostly traditional. The table 6 clarifies that United Bankers have not distributed a note, which contains these mentioned complex payout structures. The figure 12 and table 6 also clearly show that there are differences between notes the distributors utilize. Appendix C contains the complete list of all observed payout features in terms of distributor.

Number of notes and proportion in terms of payout structure and distributor

All Assets	Cliquet (incl Reverse)	% of structure	Ladder	% of structure	Himalaya or Altiplano	% of structure	Binary	% of structure	Knock-in/out	% of structure	Callable	% of structure	Best- / Worst of	% of structure	Range note or Ratchet- or Accum.inverse floater	% of structure	Distributed notes	%
Aktia	5	10,6	1	3,8	0		2	18,2	1	6,7	2	15,4	0		1	7,1	18	5,2
% of distributed notes	27,8		5,6				11,1		5,6		11,1				5,6			
Evli	2	4,3	0		1	16,7	0		0		0		0		0		5	1,5
% of distributed notes	40,0				20,0													
FIM	11	23,4	16	61,5	1	16,7			2	13,3	1	7,7	13	35,1	0		35	10,2
% of distributed notes	31,4		45,7		2,9				5,7		2,9		37,1					
Mortgage Society	0		0		0		1	9,1	0		0		0		0		2	0,6
% of distributed notes							50,0											
Municipality Finance	4	8,5	0		0		1	9,1	0		0		3	8,1	0		16	4,7
% of distributed notes	25,0						6,3						18,8					
Nordea	4	8,5	2	7,7	0		2	18,2	5	33,3	6	46,2	2	5,4	6	42,9	85	24,8
% of distributed notes	4,7		2,4				2,4		5,9		7,1		2,4		7,1			
OKO	12	25,5	6	23,1	2	33,3	2	18,2	4	26,7	3	23,1	3	8,1	5	35,7	55	16,0
% of distributed notes	21,8		10,9		3,6		3,6		7,3		5,5		5,5		9,1			
Sampo	3	6,4	0		0		1	9,1	0		0		3	8,1	0		17	5,0
% of distributed notes	17,6						5,9						17,6					
SEB	1	2,1	0		0		0		0		0		1	2,7	0		13	3,8
% of distributed notes	7,7												7,7					
Handelsbanken	2	4,3	1	3,8	0		1	9,1	1	6,7	1	7,7	8	21,6	1	7,1	38	11,1
% of distributed notes	5,3		2,6				2,6		2,6		2,6		21,1		2,6			
United Bankers	0		0		0		0		0		0		0		0		18	5,2
% of distributed notes																		
Bank of Åland	3	6,4	0		2	33,3	1	9,1	2	13,3	0		4	10,8	1	7,1	41	12,0
% of distributed notes	7,3				4,9		2,4		4,9				9,8		2,4			
TOTAL	47	100,0	26	100,0	6	100,0	11	100,0	15	100,0	13	100,0	37	100,0	14	100,0	343	100,0
% of distributed notes	13,7		7,6		1,7		3,2		4,4		3,8		10,8		4,1			

Table 6. *The table presents the number of notes and proportion in terms of different payout structures and distributor. Figure 12 showed that FIM's notes are mostly complex. This table shows the named strategies, which are distributed, and the number of the notes and their proportion of the distributor's notes. For instance, 16 notes or 46% of FIM's notes contain ladder options, 13 notes or 37% best of- or worst of options and 11 notes or 31,4% are cliquet or reverse cliquet structures. The table also shows that FIM's ladder notes represents 62% of all distributed ladder notes. Another interesting point is the United Bankers' number of distributed notes and their proportion. Figure 12 showed that United Bankers' notes are mostly traditional. This table clarifies that United Bankers have not distributed a note, which contains these mentioned complex payout structures. The figure 12 and Table 6 clearly show that there are differences between notes the distributors utilize.*

Figure 13 shows the yearly proportion of complex and traditional notes. At first, the proportion of complex notes increases from 47,6% in 2002-2003 to 55,6% in the year 2004 and 64% in 2005. After that, the proportion decreases substantially 13 %-units to 51% in the year 2006 and then increases again to 60% in 2007. The average proportion of complex notes is 55,7%.

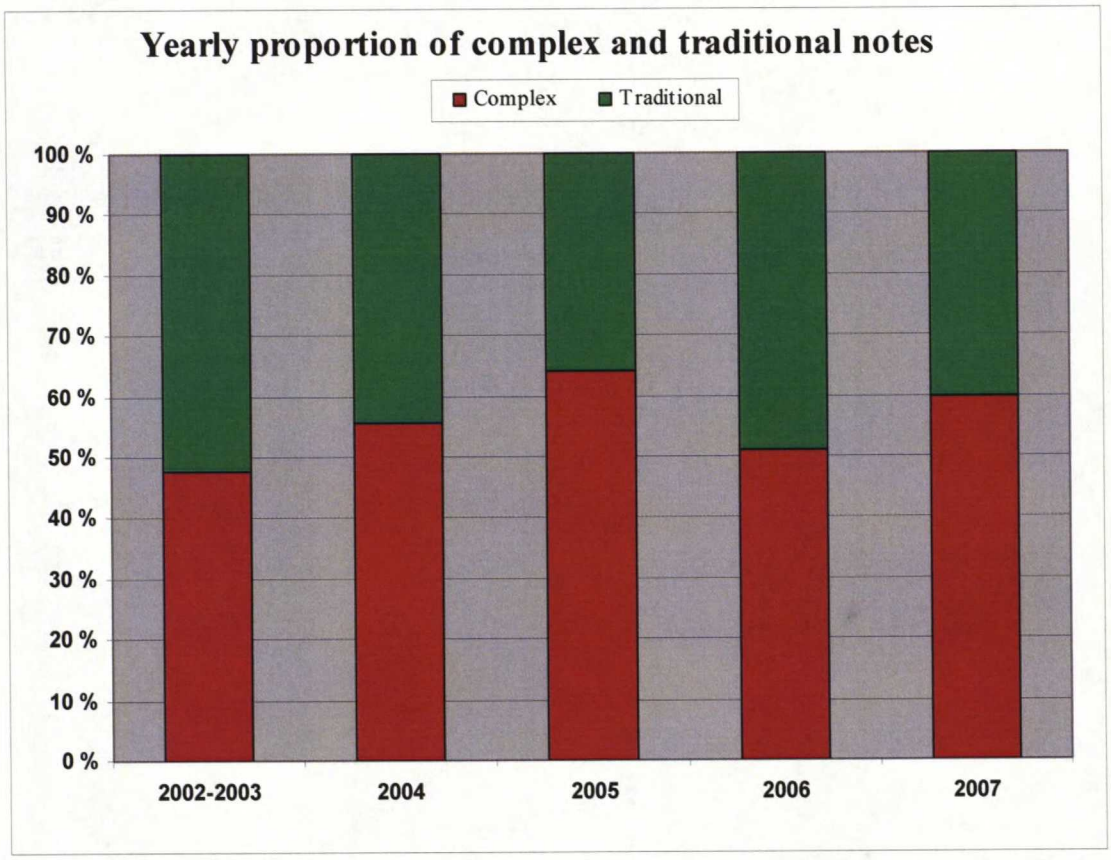

Figure 13. *The figure shows the yearly proportion of complex and traditional notes. At first, the proportion of complex notes increases from 47,6% in 2002-2003 to 55,6% in the year 2004 and 64% in 2005. After that, the proportion decreases substantially 13 %-units to 51% in the year 2006 and then increases again to 60% in 2007. The average proportion of complex notes is 55,7%.*

The first hypothesis discusses this yearly proportion issue. All the results of hypotheses are better shown in Appendix H.

H1: *Payout calculation has become more complicated.*

This hypothesis is tested by calculating the yearly proportions of complex notes are then compared to it previous year's proportions statistically. The result of the hypothesis one, "Payout calculation has become more complicated", is not statistically significant although some yearly progress to that direction can be seen. The number of issued complex notes, however, is not such great that the results would be significant.

6.2.Equities as underlying assets

Equities as underlying asset group accounts for 77%, or 264 of 343 notes in the sample. It is overwhelmingly the largest underlying asset group of capital guaranteed structured retail products sold in Finland between 2002 and 2007.

6.2.1. Composition of underlying equity assets

Equities-group consists of four different underlying equity classes as shown in Figure 14. Classes are composed of single equity index, basket of equity indexes, basket of stocks or a single stock. Basket of equity indexes-linked notes is the largest group of equities class and stands for 46% of issued equity linked notes. A single equity index as underlying asset is the second largest class with 35% of all equity notes. Basket of stocks is third with 18% proportion and a single stock-class is the smallest with only one note. It can be clearly seen that indexes as a whole are popular among equity class, totaling over 81% of the notes distributed. These proportions are quite different from Henderson and Pearson (2007) figures. Their study is the only one that can be evaluated according to equity classes. Their sample consists of almost 1600 equity notes, of which 54% are single stocks, 34% single index and 12% multiple stocks or indexes. Especially the single stock-class (54% vs. 0,4%) differs substantially from these figures presented below.

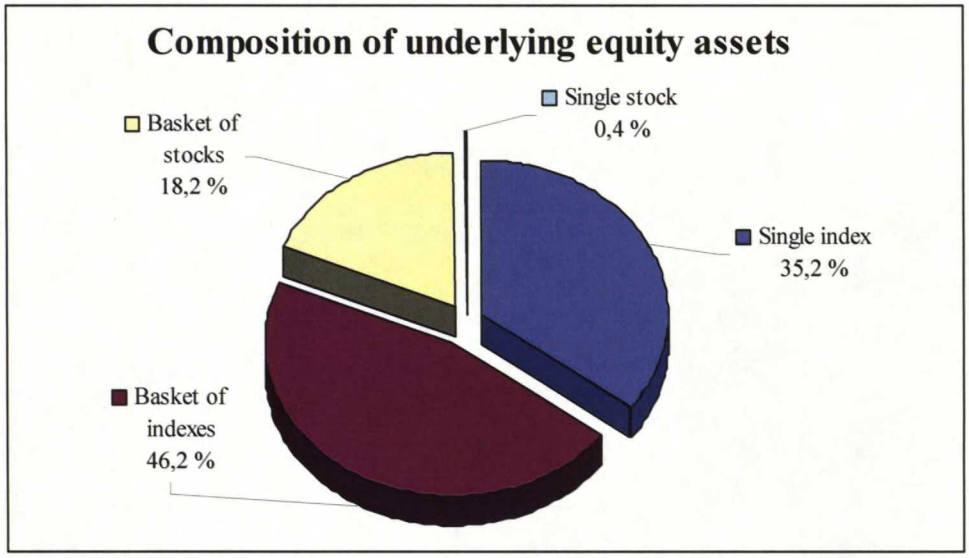

Figure 14. *The figure shows the composition of underlying equity assets. Basket of equity indexes-linked notes is the largest group of equities class and stands for 46% of issued equity linked notes. A single equity index as underlying asset is the second largest class with 35% of all equity notes. Basket of stocks is third with 18% proportion and a single stock-class is the smallest with only one note. It can be clearly seen that indexes as a whole are popular among equity class, totaling over 81% of the notes distributed.*

Table 7 shows the number of notes, proportion and correlation in terms of underlying equity class and distributor. Comparing proportions of single index notes sold per distributor to total notes sold per distributor can be seen that Evli has not distributed a note with single index underlying. Handelsbanken's proportion of 8% is also much less than average of 35% of single index-notes. Highest single index user is Nordea with 53% proportion. Correlation between number of single index notes per distributor and total number of notes per distributor is high, over 0,94. It tells in general, that a big (small) distributor as a total is also big (small) proportionally in single index class. There are not wide discrepancies except Handelsbanken, whose share of single index class is 2,2% but total share is 9,1%.

Basket of indexes is the largest group with 46% proportion of equity notes. Comparing proportions of basket of indexes-linked notes sold per distributor to total notes sold per distributor we can find that Bank of Åland uses least this underlying group, 17% of notes compared to 46% on average. Highest user is Evli, all of its notes are in this category. Over 70% users are also FIM, Handelsbanken and United Bankers. Correlation between number of basket of indexes-notes per enterprise and total number

of notes per enterprise is 0,81. It can be seen for instance, that Bank of Åland's proportion of this basket of indexes-class is 4,9% but the total proportion is 13,6%, 2,8-fold. Also Aktia has almost the same discrepancy, 2,5% vs. 5,3%. On the other hand, Evli's proportion of this class is 3,3% compared to 1,5% of total. These discrepancies incur lower correlation than in the single index-class.

Number of notes, proportion and correlation in terms of underlying equity class and distributor

	Equity class										
	Single index		Indexes		Stocks		Single stock				Correlation, Distributor & Total
		%		%		%		%	Total	%	
Aktia	6	6,5	3	2,5	4	8,3	1	100,0	14	5,3	
% of Aktia's notes	42,9		21,4		28,6		7,1		100,0		0,584
Evli	0	0,0	4	3,3	0	0,0	0	0,0	4	1,5	
% of Evli's notes	0,0		100,0		0,0		0,0		100,0		0,705
FIM	6	6,5	17	13,9	0	0,0	0	0,0	23	8,7	
% of FIM's notes	26,1		73,9		0,0		0,0		100,0		0,875
Mortgage Society	1	1,1	1	0,8	0	0,0	0	0,0	2	0,8	
% of MS*s notes	50,0		50,0		0,0		0,0		100,0		0,905
Municipality Finance	3	3,2	7	5,7	4	8,3	0	0,0	14	5,3	
% of MF's notes	21,4		50,0		28,6		0,0		100,0		0,874
Nordea	34	36,6	24	19,7	6	12,5	0	0,0	64	24,2	
% of Nordea's notes	53,1		37,5		9,4		0,0		100,0		0,861
OKO	16	17,2	18	14,8	10	20,8	0	0,0	44	16,7	
% of OKO's notes	36,4		40,9		22,7		0,0		100,0		0,981
Sampo	2	2,2	6	4,9	2	4,2	0	0,0	10	3,8	
% of Sampo's notes	20,0		60,0		20,0		0,0		100,0		0,885
SEB	5	5,4	7	5,7	0	0,0	0	0,0	12	4,5	
% of SEB's notes	41,7		58,3		0,0		0,0		100,0		0,932
Handelsbanken	2	2,2	17	13,9	5	10,4	0	0,0	24	9,1	
% of SHB's notes	8,3		70,8		20,8		0,0		100,0		0,757
United Bankers	5	5,4	12	9,8	0	0,0	0	0,0	17	6,4	
% of UB's notes	29,4		70,6		0,0		0,0		100,0		0,894
Bank of Åland	13	14,0	6	4,9	17	35,4	0	0,0	36	13,6	
% of BoÅ's notes	36,1		16,7		47,2		0,0		100,0		0,319
Total	93	100,0	122	100,0	48	100,0	1	100,0	264	100,0	
% of total notes	35,2		46,2		18,2		0,4		100,0		1,000
Correlation, Class & Total		0,942		0,811		0,617		-0,140		1,000	

Table 7. *The table shows the number of notes, proportion and correlation in terms of underlying equity class and distributor. Comparing proportions of single index notes sold per distributor to total notes sold per distributor can be seen that Evli has not distributed a note with single index underlying. Highest single index user is Nordea with 53% proportion compared to an average of 35%. Correlation between number of single index notes per enterprise and total number of notes per enterprise is high, over 0,94. Basket of indexes is the largest group with 46% proportion of equity notes. Comparing proportions of basket of indexes-linked notes sold per distributor to total notes sold per distributor we can find that Bank of Åland uses least this underlying group, 17% of notes compared to 46% on average. Highest user is Evli, all of its notes are in this category. Basket of stocks-class represents 18% of total equity notes. Bank of Åland is the largest proportionally user, 47% of its notes compared to average of 18%. The correlation between number of basket of stocks-notes per distributor and total*

number of notes per distributor is 0,62, lower than on the index classes. That is because the discrepancies in this class are quite large. Single stock-class is the smallest class. Only one Aktia's note is distributed under this class. This naturally affects to correlation and proportional figures. When looking at correlations between numbers of distributor's notes in different equity classes and total number of notes in different equity classes, we can find that OKO Bank's correlation is highest, over 0,98 and Bank of Åland's lowest 0,32. This tells that OKO has sold notes with same underlying type than on average and Bank of Åland has used its own kind of proportional assortment.

Basket of stocks-class represents 18% of total equity notes. Bank of Åland is the largest proportionally user of this class underlyings, 47% of its notes compared to average of 18%. Many distributors, 42% of them, have not used this type of underlying at all. The correlation between number of basket of stocks-notes per distributor and total number of notes per distributor is 0,62, lower than on the index classes. That is because the discrepancies in this class are quite large.

Single stock-class is the smallest class. Only one note, Aktia as a distributor, is sold under this class. This naturally affects to correlation and proportional figures.

When looking at correlations between numbers of distributor's notes in different equity classes and total number of notes in different equity classes, we can find that OKO Bank's correlation is highest, over 0,98 and Bank of Åland's lowest 0,32. This tells that OKO has sold notes with same underlying type than on average and Bank of Åland has used its own kind of proportional assortment.

6.2.2. Equities-class containing emerging market assets

Emerging markets are defined in the study using Morgan Stanley Capital International's Emerging Market Index classification as of July 2006. Another used classification is from The Economist. Emerging market classes are divided into five different groups according to percentage of underlying containing emerging market assets. Groups and Emerging Market proportions are: EM 0%, EM 1-50%, EM 51-99%, EM 100% and EM Var. EM 0% means that underlying assets are completely from developed markets and

EM 100% that underlying assets are only from emerging markets. Groups EM 1-50% and EM 51-99% contain respectively 1-50% and 51-99% of emerging market assets. Group EM Var means variable proportion of emerging markets assets. The proportion fluctuates over time. Figure 15 shows proportions of emerging markets classes. It can be seen that the proportion of group EM 0%, completely developed markets assets is dominant with 69% share. The second largest group is with 14% share the EM 100%, which contains only emerging markets assets.

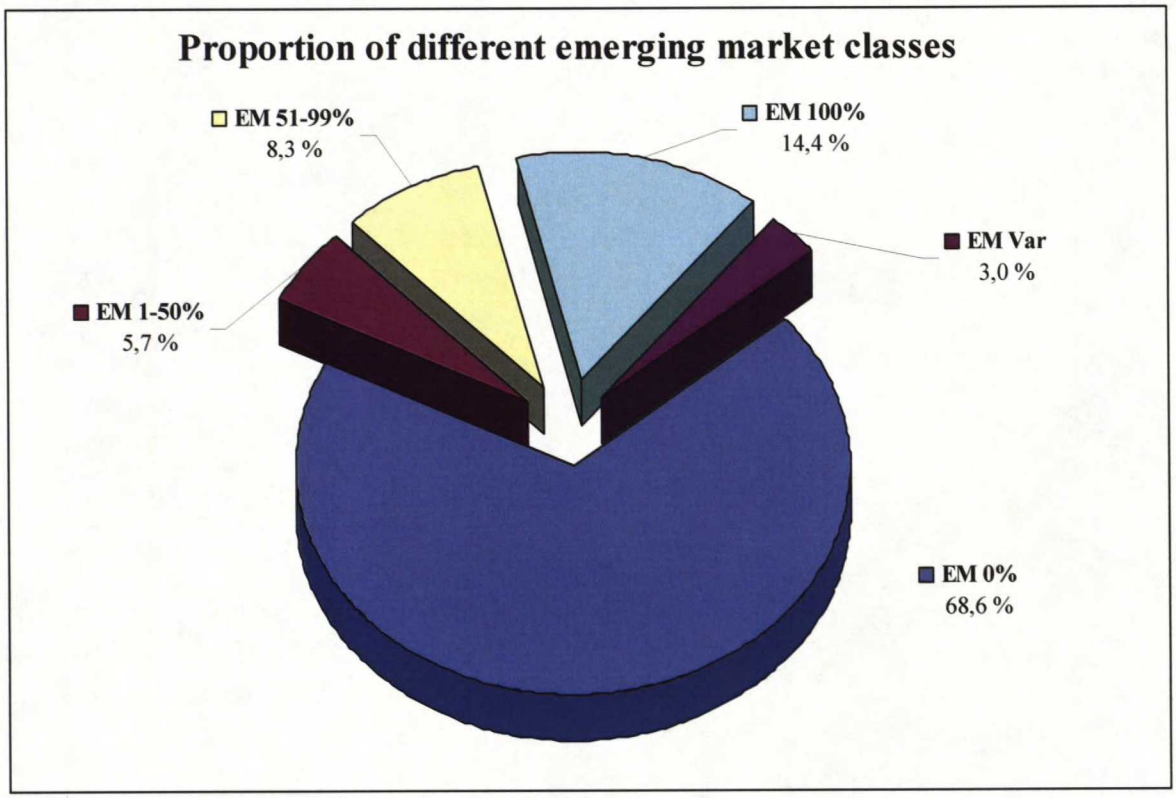

Figure 15. *The figure shows proportions of emerging markets classes. It can be seen that the proportion of group EM 0%, completely developed markets assets is dominant with 69% share. The second largest group is with 14% share the EM 100%, which contains only emerging markets assets.*

Table 8 presents the number of notes, proportion and correlation in terms of emerging market class and distributor. Most of the sold notes' underlying equity assets are from developed markets. Proportion of entirely developed market underlyings, group EM 0%, is 69%, or 181 of 264 notes. Group EM 1-50% accounts for 6% and group EM 51-99%'s proportion is 8%. Entirely emerging market underlyings' share, group EM 100%,

is 14% and variable group accounts for 3% of total equity notes. Complete list of utilized underlying equity assets and their splitting between developed and emerging markets is shown in appendix B.

Number of notes, proportion and correlation in terms of Emerging Market-class and distributor

Equities	Emerging Market Class												Correlation, Distributor & Total
	EM 0%		EM 1-50%		EM 51-99%		EM 100%		EM Var%		Total	%	
Aktia	7	3,9	0	0,0	2	9,1	5	13,2	0	0,0	14	5,3	
% of Aktia's notes	50,0		0,0		14,3		35,7		0,0		100,0		0,843
Evli	2	1,1	0	0,0	2	9,1	0	0,0	0	0,0	4	1,5	
% of Evli's notes	50,0		0,0		50,0		0,0		0,0		100,0		0,613
FIM	14	7,7	3	20,0	1	4,5	2	5,3	3	37,5	23	8,7	
% of FIM's notes	60,9		13,0		4,3		8,7		13,0		100,0		0,963
Mortgage Society	2	1,1	0	0,0	0	0,0	0	0,0	0	0,0	2	0,8	
% of MS's notes	100,0		0,0		0,0		0,0		0,0		100,0		0,988
Municipality Finance	8	4,4	1	6,7	1	4,5	2	5,3	2	25,0	14	5,3	
% of MF's notes	57,1		7,1		7,1		14,3		14,3		100,0		0,979
Nordea	42	23,2	2	13,3	1	4,5	17	44,7	2	25,0	64	24,2	
% of Nordea's notes	65,6		3,1		1,6		26,6		3,1		100,0		0,965
OKO	32	17,7	2	13,3	2	9,1	8	21,1	0	0,0	44	16,7	
% of OKO's notes	72,7		4,5		4,5		18,2		0,0		100,0		0,996
Sampo	6	3,3	0	0,0	3	13,6	1	2,6	0	0,0	10	3,8	
% of Sampo's notes	60,0		0,0		30,0		10,0		0,0		100,0		0,895
SEB	6	3,3	2	13,3	1	4,5	2	5,3	1	12,5	12	4,5	
% of SEB's notes	50,0		16,7		8,3		16,7		8,3		100,0		0,978
Handelsbanken	19	10,5	3	20,0	1	4,5	1	2,6	0	0,0	24	9,1	
% of SHB's notes	79,2		12,5		4,2		4,2		0,0		100,0		0,980
United Bankers	9	5,0	0	0,0	8	36,4	0	0,0	0	0,0	17	6,4	
% of UB's notes	52,9		0,0		47,1		0,0		0,0		100,0		0,670
Bank of Åland	34	18,8	2	13,3	0	0,0	0	0,0	0	0,0	36	13,6	
% of BoÅ's notes	94,4		5,6		0,0		0,0		0,0		100,0		0,984
Total	181	100,0	15	100,0	22	100,0	38	100,0	8	100,0	264	100,0	
% of total notes	68,6		5,7		8,3		14,4		3,0		100,0		1,000
Correlation, Class & Total		0,971		0,569		-0,135		0,818		0,287		1,000	

Table 8. *Most of the sold notes' underlying equity assets are from developed markets. Proportion of entirely developed market underlyings, group EM 0%, is 69%, or 181 of 264 notes. Group EM 1-50% accounts for 6% and group EM 51-99%'s proportion is 8%. Entirely emerging market underlyings' share, group EM 100%, is 14 % and variable group accounts for 3 % of total equity notes.*

When looking closer to developed market underlyings, group EM 0%, comparing proportions of notes sold per distributor to total notes sold per distributor, can be seen that Mortgage Society has distributed only this type of notes. Also Bank of Åland's proportion is large, 94 %, or 34 of its 36 notes compared to average of 69 %. On the lower than average side, Aktia, Evli and SEB have the same proportion, 50 % of their

notes belongs to this category, somewhat smaller proportion than average of 69 % of developed markets-notes.

Group EM 1-50% contains 15 notes and its proportion is 6% of total equity notes, while share of group EM 51-99% is 8%. Five distributors in EM 1-50%-group have not used such type of underlying. Half of Evli's and almost half of United Bankers' notes belong to EM 51-99%-group. This is much higher proportion than average of 8%. Correlation of number of notes in EM 51-99%-group per enterprise and total number of notes per enterprise is -0,14. This is due to reason, that Nordea's proportion of the group is 4,5% but the total proportion is 24,2%, 5,4-fold. On the other side, United Bankers' proportion of this group is 36,4% compared to 6,4% of total. Also Sampo has discrepancy, 13,6% vs. 3,8%. These discrepancies together with others incur negative correlation.

Group EM 100%, entirely emerging market group, has a proportion of 14% of all equity notes. 36% of Aktia's and 27% of Nordea's notes belong to this class compared to average of 14%. Four distributors have not used completely emerging markets' underlying assets. Nordea's proportion of this EM 100%-group is 45% but the total proportion is 24%. Also Aktia has quite large discrepancy, 13% vs. 5%.

Group EM Var%, variable proportion of emerging markets, consists of eight notes. The variable-status comes partly from rebalancing of indexes containing emerging market assets, and partly from theme-indexes including variable proportion of emerging market assets. Only four distributors have sold this type of notes. 14% of Municipality Finance's and 13% of FIM's notes belongs to this category. FIM's proportion of the group is 38% but the total proportion is 9%. Also Municipality Finance has large proportion of the group, 25% vs. total proportion of 5%. Partly due to these discrepancies and low number of distributors, the correlation of number of notes in EM Var%-group per enterprise and total number of notes per enterprise is 0,29.

When looking at correlations between numbers of distributor's notes in different emerging market classes and total number of notes in different emerging market classes, we can find that eight of twelve, or 67% of distributors have a correlation over 0,96. Only Evli and United Bankers have below 0,70. This is partly because there are three or

four quite small EM-groups and one remarkable. Of course, Evli and United Bankers have sold a bit different kind of notes compared to average.

Figure 16 describes the proportion of traditional and complex notes in emerging market asset classes of EM 0% and EM 100%. Figure shows that the proportion of traditional notes is much more higher in EM 100%-group which contains only emerging markets assets than in developed markets asset group EM 0%. Proportions are 71,1% vs. 46,4% while the average is near fifty-fifty. Appendix G includes the following table: Number of notes and proportion of Traditional or Complex notes in Emerging Market-classes 0% and 100% per distributor. It shows in more detailed way the differences between distributors and emerging market classes.

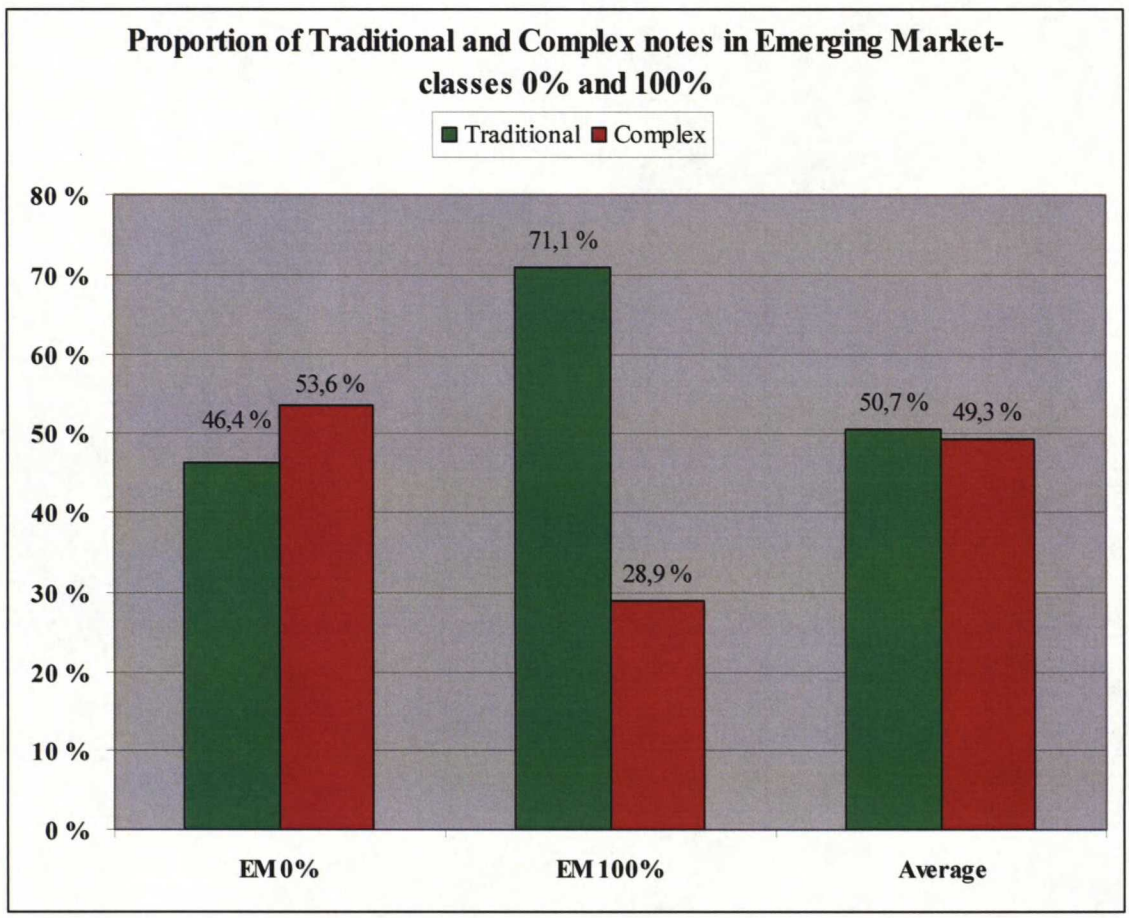

Figure 16. *The figure describes the proportion of traditional and complex notes in emerging market asset classes of EM 0% and EM 100%. Figure shows the proportion of traditional notes is much more higher in EM 100%-group which contains only emerging markets assets than in developed markets asset group EM 0%. Proportions are 71,1% vs. 46,4% while the average is near fifty-fifty.*

The fourth hypothesis is to be followed. All the results of hypotheses are better shown in Appendix H.

H4: *Structured notes whose payout is linked to emerging markets use more complex payout features than notes linked to developed markets.*

The greatest surprise for me in the results of the study is the outcome of this hypothesis. I thought the results would be in-line with the assumption. However, they are very much opposite. The proportion of complex notes with emerging markets assets is 29% while the proportion of developed markets assets is 54%. The null hypothesis is that the emerging markets share is larger than developed markets share. The null hypothesis is rejected.

6.2.3. The most utilized underlying equity assets

Underlying equity assets contain 100 different indexes or stock combinations utilized 540 times in 264 notes. It makes an average of 2,05 underlyings per note, maximum being six and standard deviation 1,26. Ten most utilized underlyings cover 60 % of all employing times. Table 9 presents the ten most used underlying equity assets. It can be seen that six are from developed markets and four from emerging markets. Three most used are from developed markets, more precisely, Euro Stoxx 50 from eurozone, S&P 500 from USA and Topix from Japan. This seems a bit like Finnish retail investors are having the kind of products they wanted. Järvinen and Saarikko (2000) results include, that Finnish retail investors prefer notes whose payout is linked to some general European stock index. Appendix B contains a complete list of utilized underlying equity assets.

Ten most utilized underlying equity assets

Underlying	Times used	Country / Regional Area	Morgan Stanley	The Economist
DJ Euro Stoxx 50 Index	88	Eurozone	Developed	Developed
S&P 500	50	USA	Developed	Developed
TOPIX (Tokyo Price Index)	43	Japan	Developed	Developed
FTSE Xinhua China 25	37	China	Emerging	Emerging
Nikkei 225 Stock Average (Japan)	32	Japan	Developed	Developed
FTSE 100 (UK)	20	UK	Developed	Developed
Kospi 200 (Korea Stock Price Index)	17	South Korea	Emerging	Emerging
CeceEur index (Czech, Hungarian and Polish Traded indices, Wiener Börse)	16	Czech, Hungary and Poland	Emerging	Emerging
DJ Euro Stoxx Select Dividend 30 Index	12	Eurozone	Developed	Developed
MSCI Taiwan	11	Taiwan	Emerging	Emerging

Table 9. *The table presents the ten most used underlying equity assets. It can be seen that six are from developed markets and four from emerging markets. The three most used are from developed markets and more precisely, Euro Stoxx 50 from eurozone, S&P 500 from USA and Topix from Japan.*

6.3.Mixed underlying assets

Mixed assets class comprises of 28 notes. It is the second largest underlying asset group with 8,2% proportion of all distributed notes. Table 10 represents the number of sold notes per distributor using different payout features in the mixed underlying asset group. FIM and Handelsbanken are the largest distributors with eight sold notes, representing either 29% of the notes. Nordea distributed only two notes, or 7% of notes in this category while the total proportion of Nordea is 25% among all distributed structured retail notes.

Asian option averaging period is used in 68% (19/28) of the mixed asset notes in final value calculations while 25% (7/28) utilize last observation date. Two of the notes are cliquet structures; both of them are OKO's notes and include the feature, which excludes some of the best periodical returns from the final value calculations. FIM is the only one using ladder options in mixed asset's class, and the ladder is included in every note FIM distributed. Sampo's only note and five of FIM's notes contain the rebalancing of underlying assets at the end of each period according to their past performance. FIM employs in 75% of its notes (6/8) a feature, which subtracts a fixed portion from final return. Digital option is used in two OKO's notes. One Sampo's and OKO's notes include the feature that predetermined fixed weightings of asset classes

are set at the end of the notes' lifetimes. 64% (18/28) of notes contain many baskets of different asset classes, including all notes of Bank of Åland, Handelsbanken and Nordea. The return of these notes is based on the return of best basket.

The average time to maturity of the mixed asset notes is 5,2 years. It ranges from 3,6 to 7,1 years. 21% of the notes (6/28) are distributed in 2004, 43% (12/28) in 2005, 29% (8/28) in 2006 and 7% (2/28) in 2007.

Number of sold notes per distributor using different payout features in the mixed underlying asset group

Distributor	Number of notes	Final value using Asian options	Final value as last observation date	Cliquet structure	Some of the best returns are excluded	Ladder option	Minimum return	Rebalancing / Best of-option	Variable participation rate	Fixed amount is subtracted from final return	Digital option	Basket of asset classes, weightings are set at the end of the note's lifetime	Many baskets of different asset classes. The return is based on the best basket.
Bank of Åland	4	4											4
FIM	8	3	5			8	2	5		6			2
Handelsbanken	8	8											8
Nordea	2	2											2
OKO	5	1	2	2	2				2		2	1	2
Sampo	1	1						1				1	
Total	28	19	7	2	2	8	2	6	2	6	2	2	18

Table 10. *The table describes the number of sold notes per distributor using different payout features. The group of mixed assets comprises of 28 notes. FIM and Handelsbanken are the largest distributors, either with eight sold notes, or 29% of the notes. Asian option averaging period is used in 68% (19/28) of the mixed asset notes in final value calculations while 25% (7/28) utilize last observation date. Two of the notes are cliquet structures; both of them are OKO's notes and include the feature, which excludes some of the best periodical returns from the final value calculations. FIM is the only one using ladder options in mixed asset's class, and the ladder is included in every note FIM distributed. Sampo's only note and five of FIM's notes contain the rebalancing of underlying assets at the end of each period according to their past performance. FIM employs in 75% of its notes (6/8) a feature, which subtracts a fixed portion from final return. Digital option is used in two OKO's notes. One Sampo's and OKO's notes include the feature that predetermined fixed weightings of asset classes are set at the end of the notes' lifetimes. 64% (18/28) of notes contain many baskets of different asset classes, including all notes of Bank of Åland, Handelsbanken and Nordea. The return of these notes is based on the return of best basket.*

6.4.Interest rates as underlying assets

Interest rate-linked products are mostly offered to institutional clients. However, some retail structures are available also with capital protection. The used data sample consists of 15 distributed capital guaranteed structured retail notes with return linked to interest rates. Five distributors sold the notes, Nordea being the largest with six notes and OKO being second with five sold notes. 87% (13/15) of them are linked to 3, 6 or 12 months Euribor rates. Other two notes are linked to longer Euro area swap-rates, one being bound to ten years swap rate. Table 11 describes the payout features of all 15 distributed notes with interest rate underlying. One Aktia's note return is based on the outperformance of 10-years swap rates over 2-years swap rates. This particular note contains also periodical return payment features, local cap and floor and fixed return as part of the notes lifetime. Other 14 notes' return is based on underlying interest rates. Accumulated return barrier with knock out call is used in four notes. Every note contains periodical payment of return, which is quite natural for interest rate linked notes. Over half of the notes (8/15) are range notes while callable features are included in five notes. Five notes also are accumulator inverse floaters, two notes are ratchet floaters and one contains digital option features. The average time to maturity of the notes is 5,2 years, ranging from 1,1 to 10 years.

Payout features of all 15 distributed notes with interest rate underlying

Distributor	Return based on underlying interest rates	Return based on outperformance option	Knock out call, accumulated return barrier	Local cap & floor	Fixed return part of products lifetime	Digital option	Periodical payment of return	Range accrual option	Accumulator inverse floater	Ratchet floater	Callable
Aktia		X		X	X		X				
Aktia	X						X		X		X
Handelsbanken	X		X				X		X		
Nordea	X						X	X			
Nordea	X						X	X			X
Nordea	X						X	X			X
Nordea	X		X				X		X	X	
Nordea	X						X	X			
Nordea	X						X	X			X
OKO	X						X	X			
OKO	X		X				X		X		
OKO	X						X	X		X	X
OKO	X		X				X		X		
OKO	X						X	X			
Sampo	X					X	X				

Table 11. *The table shows the payout features of all 15 distributed notes with interest rate underlying. Five distributors sold the notes, Nordea being the largest with six notes and OKO being second largest with five sold notes. One of the Aktia's note return is based on the outperformance of 10-years swap rates over 2-years swap rates. This particular note contains also periodical return payment features, local cap and floor and fixed return as part of the notes lifetime. Other 14 notes' return is based on underlying interest rates. Accumulated return barrier with knock out call is used in four notes. Every note contains periodical payment of return, which is quite natural for interest rate linked notes. Over half of the notes (8/15) are range notes while callable features are included in five notes. Five notes also are accumulator inverse floaters and two notes are ratchet floaters.*

6.5.Currencies as underlying assets

Currencies-group comprises of 12 notes distributed by seven different enterprises. Nordea distributed half of the notes, while other enterprises sold one note each. Other distributors are Bank of Åland, Handelsbanken, Municipality Finance, Sampo, SEB and United Bankers. Five notes use one currency pair while one note two currency pairs, five notes three and one note four currency pairs as underlyings. All of the underlying currency pairs, except one, contain euro as the other currency. Table 12 shows the utilized currency pairs. Structured retail notes employing currencies as underlying assets

use nine different currency pairs. Turkish new lira (TRY) is the most used currency against euro. Seven notes of twelve, or 58%, contain TRY-currency. The second often-employed currencies are Brazilian real (BRL) and Indian rupee (INR), both of them used four times. Swiss franc against Swedish krona is the only currency pair which does not contain euro. The average time to maturity of the notes is 2,7 years with a range from two years to five years. One note is distributed in 2003, two notes in 2004, four in 2005 and five in 2006.

Utilized currency pairs

Utilized currency pairs	Base currency	Variable currency	Times used
EURHUF	Euro	Hungarian forint	2
EURPLN	Euro	Polish zloty	2
EURSEK	Euro	Swedish krona	3
EURTRY	Euro	Turkish new lira	7
EURBRL	Euro	Brazilian real	4
EURINR	Euro	Indian rupee	4
EURRUB	Euro	Russian ruble	1
EURUSD	Euro	United States dollar	2
CHFSEK	Swiss franc	Swedish krona	1
			26

Table 12. *This table shows the utilized currency pairs. There are totally nine different currency pairs employed. Turkish new lira (TRY) is the most used currency against euro. Seven notes of twelve, or 58%, contain TRY-currency. The second often-employed currencies are Brazilian real (BRL) and Indian rupee (INR), both of them used four times. Swiss franc against Swedish krona is the only currency pair which does not contain euro.*

Table 13 shows different payout features of all 12 distributed structured retail notes with currency-related underlyings. 67% of notes (8/12) have final value calculation as last observation date. 25% (3/12) have variable participation rate subject to magnitude of the underlying performance. Two Nordea's notes have knock out call using accumulated return barrier. Four notes have digital option component. Periodical payment of return, knock-in option features and range accrual option is employed once as a payout feature of the notes. The payout's idea of all the notes, except the range accrual note, is related to the strengthening of one currency against the other currency of the note. Bank of Åland is the only distributor using range note. Its payout is linked to the number of

observation days when the EURSEK-currency is within a predetermined range of 8,95 – 9,25 using weekly observations of European Central Bank currency fixings.

Payout features of all 12 distributed notes with currency underlying

Distributor	Return based on underlying currencies	Final value as last observation date	Minimum return	Maximum return	Variable participation rate	Knock out call, accumulated return barrier	Digital option	Periodical payment of return	Knock-in option features	Range accrual option
Bank of Åland	X			X						X
Handelsbanken	X	X					X			
Municipality Finance	X	X					X			
Nordea	X	X								
Nordea	X	X							X	
Nordea	X					X	X			
Nordea	X					X	X			
Nordea	X	X			X					
Nordea	X	X			X					
Sampo	X	X			X					
SEB	X		X					X		
United Bankers	X	X		X						

Table 13. *The table shows different payout features of all 12 distributed structured retail notes with currency-related underlyings. 67% of notes (8/12) have final value calculation as last observation date. 25% (3/12) have variable participation rate subject to magnitude of the underlying performance. Two Nordea's notes have knock out call using accumulated return barrier. Four notes have digital option component. Periodical payment of return, knock-in option features and range accrual option is employed once as a payout feature of the notes. The payout's idea of all the notes, except the range accrual note, is related to the strengthening of one currency against the other currency of the note. Range note's payout is linked to the number of observation days when the related currency fixings are within a predetermined range.*

6.6.Commodities as underlying assets

Structured retail notes' underlying asset group of commodities comprises of 12 distributed notes with six different sellers. As shown in table 14, Nordea is the largest distributor with 42% (5/12) of the sold notes. Aktia and Handelsbanken have both distributed two notes with commodities. Underlying assets consist of metals, energy and agricultural products. Metals include precious metals and base metals. Precious metals consist of gold and silver; the latter is included in two of the Nordea's notes using

commodity index. Base metals employed are aluminium, copper, nickel and zinc. Energy products used as underlying assets contain crude oil, heating oil, electricity and natural gas. In addition, the utilized commodity index contains gasoline. Agricultural products include corn, wheat, sugar and soybean oil. Aktia and Evli uses agricultural indexes. Aktia's index is Goldman Sachs Commodity Index, Agriculture Excess Return which contain wheat, corn, soybean, cotton, sugar, coffee and cocoa. Evli utilized Deutsche Bank Agricultural Optimum Yield index Excess Return which measures values of corn-, soybean-, sugar- and wheat futures. Nordea's utilized commodity index, as shown in last two notes of table 14, is the Dow Jones AIG Commodity Index. The composition and weights of the index as of January 2008 are presented in appendix D.

Composition of notes whose underlying is commodity linked

Distributor	Underlying composition					
Aktia	20% Agriculture index	20% Copper	20% Crude oil	20% Nickel	20% Zinc	
Aktia	25% Corn	25% Soy bean oil	25% Sugar	25% Wheat		
Evli	25% Agriculture index	25% Crude oil	25% Gold	12,5% Nickel	12,5% Zinc	
FIM	25% Copper	25% Crude oil	25% Gold	25% Nickel		
Handelsbanken	20% Aluminium	20% Copper	20% Crude oil	20% Gold	20% Zinc	
Handelsbanken	20% Aluminium	20% Copper	20% Crude oil	20% Gold	20% Zinc	
Municipality Finance	20% Aluminium	20% Copper	20% Crude oil	20% Gold	20% Natural gas	
Nordea	100% Electricity					
Nordea	100% Electricity					
Nordea	15% Aluminium	30% Copper	30% Crude oil	5% Heating oil	15% Natural gas	5% Zinc
Nordea	100% Commodity Index					
Nordea	100% Commodity Index					

Table 14. *The table shows the composition of all 12 notes using commodity linked underlying assets. Nordea is the largest distributor with 42% (5/12) of the sold notes. Aktia and Handelsbanken have both distributed two notes with commodities. Underlying assets consist of metals, energy and agricultural products. Metals include precious metals and base metals. Precious metals consist of gold and silver; the latter is included in two of the Nordea's notes using commodity index. Base metals employed are aluminium, copper, nickel and zinc. Energy products contain crude oil, heating oil, electricity, natural gas and gasoline. Gasoline belongs to the commodity index. Agricultural products include corn, wheat, sugar and soybean oil. Aktia and Evli uses also direct agricultural indexes as underlying commodity assets.*

Table 15 describes the payout features of all 12 distributed notes with commodity underlying. It can be seen that average final values with Asian options is highly utilized, 83% (10/12) of notes include that feature. Only one note includes the feature of the final value being the last observation date. Following features have used only once: Minimum return, Capped & Floored return per underlying, accumulated return barrier

using knock out call, Himalaya structure and variable participation rate. The time to maturity of the notes is 4,4 years on average ranging from 3,5 to 5,1 years.

Payout features of all 12 distributed notes with commodity underlying

Distributor	Return based on underlying commodities	Final value using Asian options	Final value as last observation date	Minimum return	Capped return per underlying	Floored return per underlying	Knock out call, accumulated return barrier	Himalaya structure	Variable participation rate
Aktia	X	X							X
Aktia	X	X							
Evli	X	X			X	X		X	
FIM	X						X		
Handelsbanken	X	X							
Handelsbanken	X	X							
Municipality Finance	X		X	X					
Nordea	X	X							
Nordea	X	X							
Nordea	X	X							
Nordea	X	X							
Nordea	X	X							

Table 15. *The table shows the payout features of all 12 distributed notes with commodity underlying. It can be seen that average final values with Asian options is highly utilized, 83% (10/12) of notes include that feature. Only one note includes the feature of the final value being the last observation date. Following features have used only once: Minimum return, Capped & Floored return per underlying, accumulated return barrier using knock out call, Himalaya structure and variable participation rate.*

6.7.Strategies as underlying assets

Structured retail products sold in Finland contain five notes with complex predetermined strategies as underlying assets. Sampo is the distributor of four notes and one is OKO's. One of Sampo's notes utilizes the strategy based on asymmetries of FRA-rates (forward rate agreement) expectations on USD and EUR currencies. In practice, the return is linked to Deutsche Bank's FRB Basket Hedged EUR –index that represents the strategy. Another Sampo's note is linked to performance of Deutsche Bank's Dynamic Carry-index. The index reflects the strategy of asymmetries between currencies' exchange rates and interest rates. Strategy includes ten currencies of which

six are used at a time. Three currencies are utilized for funding and another three for placing purposes.

OKO and Sampo use a strategy with dynamic rebalancing of asset weights between their own equity funds and short-term interest rate funds. The rebalancing is actively done according to past volatility of underlying equity funds, and in Sampo's note also in compliance with past performance of funds, time to maturity and interest rate levels. Both of the notes also have a possibility to overweight equity funds with theoretical internal borrowing.

Sampo's fourth note is quite similar to previously mentioned with rebalancing asset weights between equity and short-term interest rate funds. Now the equity fund is replaced with agricultural commodities and with renewable energy technology fund. In this note, the rebalancing is carried out with basket of commodities and technology fund according to past performance.

Strategy notes' time to maturity at issuance varies between four and seven years, average being 5,7 years. Three notes are sold in 2007 and one in both of the years 2004 and 2005.

6.8.Credit products as underlying

The data sample includes four notes whose underlying asset is credit linked. All these credit-linked notes contain a basket of companies with investment grade ratings. Number of companies varies from 120 to 130 according to note. The idea of the notes is that they pay a better return if no credit event occurs. In case of a credit event, it is subject to notes' payout rules in what extent the payout diminishes.

Notes are distributed half-and-half by Handelsbanken and Nordea. Each note has a time to maturity of approximately five years. Both Handelsbanken's notes return is paid on a yearly basis. Coupon is relatively high but diminishes by 25 % on each credit event. If four credit events occur, the subsequent coupons are non-existent. Principal is fully paid at maturity irrespective of the number of credit events. One of Nordea's note payout is somewhat similar to notes of Handelsbanken with decreasing yearly coupons in the case

of credit events. The main difference is that principal payable at maturity diminishes also in accordance with credit events, 2,5 percentage points on event but being no less than 90 % of original principal. The other Nordea's note pays no yearly coupons. The return is paid at maturity and its extent is subject to number of credit events.

6.9.Hedge funds as underlying

The data sample contains only three notes whose return is linked to hedge funds. These all are distributed by FIM and issued by Credit Suisse. Notes embody similar features in many ways. Time to maturity of each note is 5,2 years, payout is linked to index or indexes with Asian option features and each note contains worst-of option characteristics as worst monthly performance in a calendar year is added to return calculation. This worst monthly return can naturally be negative. One of these notes is issued in 2005 and the others in 2006. One distinctive feature is that two notes are linked straight to the performance of Credit Suisse/Tremont investable hedge fund while one is linked to same index provider's hedge fund sector indexes such as long/short equity, global macro, event driven, emerging markets and managed futures.

7. Conclusions and recommendation

The Finnish Financial Supervision Authority (FSA, Rata) has been clearly concerned of the transparency of pricing the index-linked notes to retail customers. The results of this study and the previous studies in the literature review show that the concern is justified. There are differences between the agreements of the notes of separate distributors. Some distributors utilize for instance, longer Asian option evaluation periods or more complex payout features than others on average. There are German evidence (Stoimenov and Wilkens, 2005) that the products with embedded exotic options are subject to even higher premiums compared to common classic products. Why this could not be the situation in Finnish markets also? In addition, almost all of the previous studies show that the structured products are priced, on average, above their theoretical values.

Finnish Structured Products Association published a recommendation on February 2008 that its members start to disclose the structuring costs in all structured notes offered to non-professional clients in order to increase the transparency of these products. The idea is that components of the specific structured note are valued on a certain valuation day. This valuation day is mentioned in the documentation, it is a specific day shortly prior to the issue date or the start of the subscription period. The production cost of the structured note is the sum of the values of the components on the valuation date. The difference between the subscription price and the production cost of the structured note is defined as the structuring cost. This method is also approved by Finnish FSA.

However, the disclosed production cost of the structured note contains also some problematic features (Arvopaperi, 2008). Firstly, the cost-figure is disclosed on annual basis, i.e. the total structuring cost divided by the time to maturity in years, although it is charged entirely on subscription date. Secondly, it is not possible to evaluate the competitiveness of the pricing of the underlying option- and zero-coupon note contracts based on the cost figure.

The problematic feature regarding lack of transparency is an unpleasant issue. In optimal situation, structured retail products offer tremendous opportunities to invest cost efficiently minor sums with capital protection to wide variety of assets.

The Netherlands Bankers' Association (NVB) issued the list of recommendations for best practices for transparency in information for structured products in 2007. The list is included in the Exploratory analysis of structured products by the Netherlands Authority for the Financial Markets, published in 2007. The recommendations are:

1. The name of the investment product should reflect the substance of the proposition.
2. A qualitative explanation of the product should be given.
3. The underlying security should be described.
4. The pay-off structure / product features should be described.
5. The information should include an example of how the product works, preferably with visual aids.

6. The expected returns (in absolute and relative terms) should be stated, compared with the possible risks, accompanied by a scenario analysis with at least 3 relevant scenarios (unfavourable, average, favourable).
7. The product's objective and targeted market for whom the product is interesting should be described.
8. Transparent information should be provided to the client about the costs that are incurred to realise the product's investment objective.
9. The tax aspects of the product should be listed.
10. The locations of the information required by law (e.g. the prospectus) should be listed, and the picture that the marketing material presents about the product should correspond to that statutory information.
11. Information should be provided about the product's tradability.

I would warmly recommend this NVB's list of recommendations to be used also in Finnish markets. However, I would like to add couple of my own recommendations to be considered:

- Buy only notes whose issuer has a branch network in Finland. This is because international investments banks do not have such big reputational risks in Finland for the notes they issue. They might not pay that much attention than local issuers that the terms and agreements are fair for the retail investors, although the issuer can be other firm than distributor. Local players may face easier reputational problems if the issued notes include unfair conditions, for instance huge embedded costs.

- Buy only notes from well known distributors and issuers with prolonged good reputation. For instance, the huge subscription and management fees of FIM's funds were a subject of Finnish financial newspapers lately. If FIM charges high costs from funds, why not also from less transparent structured retail products?

8. References

8.1.Books, research papers and Masters' theses

Bamber, B., 2004. Equity-Linked Notes. In: Batchvarov, A. (Ed.), Hybrid Products. Instruments, Applications and Modelling. Risk Books, London.

Baule, R., Entrop O., Wilkens M., 2008. Credit risk and bank margins in structured financial products: Evidence from the German secondary market for discount certificates. Journal of Futures Markets 28, Issue 4, 376-397.

Bernard C., Boyle P., Tian W., 2007. Optimal design of structured products and the role of capital protection. Available at SSRN: http://ssrn.com/abstract=1070803

Breuer W., Perst A., 2007. Retail banking and behavioral financial engineering: The case of structured products. Journal of Banking & Finance 31, 827-844.

Burth S., Kraus T., Wohlwend H., 2001. The Pricing of Structured Products in the Swiss Market. The Journal of Derivatives 9, Issue 2, 30-40.

Chen, A.H., Kensinger J.W., 1990. An analysis of market-index certificates of deposit. Journal of Financial Services Research, Issue 4, 93-110.

Chen, K.C., Sears, R.S., 1990. Pricing the SPIN. Financial Management 19, Issue 2, 36-47.

Driessen, J., Maenhout, P., Vilkov, G., 2005. Option-Implied Correlations and the Price of Correlation Risk. Available at SSRN: http://ssrn.com/abstract=673425

Edlund, F., Eriksson, L., Iwarson, T., Sjögemark, P., 2004. Aktieindexobligationer: Tre studier av avkastning och risk. Handelsbanken Capital Markets.

Fischer R., 2007. Do investors in structured products act rationally? Available at SSRN: http://ssrn.com/abstract=1011008

Georgieva A., 2005. The use of structured products: applications, benefits and limitations for the institutional investor. University of Zurich and the Swiss Federal Institute of Technology Zurich (ETH Zurich).

Henderson B.J., Pearson N.D., 2007. Patterns in the payoffs of structured equity derivatives. Available at SSRN: http://ssrn.com/abstract=972570

Järvinen, S., Saarikko, J., 2000. Suomalaisten piensijoittajien käsityksiä indeksilainoista. Helsinki School of Economics, working paper, Helsinki.

Koivula, J., 2003. Finnish equity linked notes – profitability of issuance in 1997-2001. Helsinki School of Economics, Helsinki.

Kontra, H., 2001. Strukturoiduista velkakirjoista Suomessa – case osakeindeksilainat. Helsinki School of Economics, Helsinki.

McCann, K., Cilia, J., 1994. Product Summary, Structured Notes. Federal Reserve Bank of Chicago.

O'Kane, D., 2001. Credit derivatives explained: Markets, products and regulations. Structured Credit Research, Lehman Brothers.

Peng, S.Y., Dattatreya, R.E., 1995. The Structured Note Market. Irwin Professional Publishing, Chicago.

Robinson, B.L., 1998. The inefficiency costs of guaranteed investment products. The Journal of Derivatives 6, Issue 1, 25-37.

Stoimenov, P.A., Wilkens, S., 2005. Are structured products 'fairly' priced? An analysis of the German market for equity-linked instruments. Journal of Banking & Finance 29, Issue 12, 2971-2993.

Thonabauer, G., 2004. Financial Instruments: Structured Products Handbook. Oesterreichische Nationalbank, Vienna.

Vanini P., Döbeli B., 2007. Stated and revealed investment decisions concerning structured products. Available at SSRN: http://ssrn.com/abstract=991868

Wilkens, S., Erner, C., Roder, K., 2003. The pricing of structured products in Germany. The Journal of Derivatives 11, Issue 1, 55-69.

8.2.Other material

AFM (Netherlands Authority for the Financial Markets), 15.5.2007. Exploratory analysis of structured products.
http://www.afm.nl/consumer/upl_documents/Report_Exploratory_analysis_of_structured_products_150507.pdf

Arvopaperi, 2008. Vikkelät indeksilainat rohmuavat rahaa. Talentum. Huhtikuu/2008, 32-33.

BCA Research, 11.2.2008. Special Report: A Vicious circle of credit retention.

Benson R., Managing Director, Arete Consulting, SPA Conference, New York, March 2007. An Overview of the European Structured Retail Products Market in 2006.

EFAMA (European Fund and Asset Management Association), Quarterly statistical release, March 2007. Trends in the European Investment Fund Industry in the Fourth Quarter of 2006 and Results for the Full-Year 2006.

Finansinspektionen, 2.2.2005. The written information that is provided to purchasers of index bonds. Report 2005:1.
http://www.fi.se/upload/90_English/20_Publications/10_Reports/Report2005_1.pdf

Finansinspektionen, 22.12.2006. Equity-linked bonds – an evaluation of the new prospectus rules. Report 2006:19.
http://www.fi.se/upload/90_English/20_Publications/10_Reports/2006/Report2006_19.pdf

FSA (Finnish Financial Supervision Authority), 23.4.2008. http://www.fin-fsa.fi/Eng/Regulation/Prospectus/etusivu.htm

Global Derivatives, 2008. Options Database.
http://www.global-derivatives.com/index.php

Garidi T., RiskMetrics Group, Client Conference, Paris, 2007. Risk and valuation for structured investment products.
http://www.riskmetrics.com/events/paris2007/presentations/1_Garidi_Risk_Valuation.pdf

Societe Generale, 2007. The ABC of equity derivatives and structured products.
http://www.equityderivatives.com/admins/files/other/comdeai/en/files/74.pdf

Suomen Sijoitusrahastoyhdistys ry, Rahastorapotti 2/2005-1/2007.
http://www.sijoitustutkimus.fi/rahastoraportti_arkisto.shtml

Suomen Strukturoidut Sijoitustuotteet ry, 23.1.2007. Strukturoitujen sijoitustuotteiden suosio voimakkaassa kasvussa: vuonna 2006 myynti kasvoi lähes 44%. Press release.

Taloussanomat.fi, 23.4.2007, Nordea paljastaa indeksilainojen kulut,
http://www.taloussanomat.fi/page.php?page_id=103&news_id=20079824&rss=2

The Finnish Financial Supervision Authority, 20.3.2007. Pricing of index-linked notes not sufficiently transparent. The FSA Newsline 1/2007. http://www.fin-fsa.fi/Eng/FIN-FSA_News/FSA_Newsline/1_2007/1.htm

The Finnish Financial Supervision Authority, 11.10.2005. Trend in index-linked notes towards offering a more comprehensive investment portfolio. The FSA Newsline 5/2005. http://www.fin-fsa.fi/Eng/FIN-FSA_News/FSA_Newsline/2005/5_2005/3.htm

The Finnish Financial Supervision Authority, 11.10.2005. FIN-FSA studied realised values of index-linked notes' indicative terms. The FSA Newsline 5/2005.
http://www.fin-fsa.fi/Eng/FIN-FSA_News/FSA_Newsline/2005/5_2005/4.htm

The Finnish Financial Supervision Authority, 28.9.2004. Greater complexity of return calculation impairs comparison of index-linked notes. The FSA Newsline 5/2004.
http://www.fin-fsa.fi/Eng/FIN-FSA_News/FSA_Newsline/2004/5_2004/052004_3.htm

The Finnish Financial Supervision Authority, 20.3.2003. Strukturoidut instrumentit. The FSA Newsline 1/2003.

http://www.rahoitustarkastus.fi/Fin/Tiedotus/Rata_tiedottaa/2003/1_2003/Strukturoidut_instrumentit.htm

The MSCI Emerging Markets Index, 26.4.2008.
http://www.mscibarra.com/products/indices/licd/em.html

8.3.Terms and agreements sheets

Aktia Sparbank Abp, 2007. 4/2007 BRIC 40-obligation, lånespecifika villkor.

Aktia Sparbank Abp, 2007. 2/2007 Bioenergiobligation, lånespecifika villkor.

Aktia Sparbank Abp, 2006. 6/2006 Råvaruobligation, lånespecifika villkor.

Aktia Sparbank Abp, 2006. 3/2006 Eastern Europe, lånespecifika villkor.

Aktia Sparbank Abp, 2005. P8/2005, lånespecifika villkor.

Aktia Sparbank Abp, 2005. P7/2005, lånespecifika villkor.

Aktia Sparbank Abp, 2005. P6/2005, lånespecifika villkor.

Aktia Sparbank Abp, 2005. 5/2005 Asia-Pacific, lånespecifika villkor.

Aktia Sparbank Abp, 2005. P5/2005, lånespecifika villkor.

Aktia Sparbank Abp, 2005. 2/2005 Absolut, lånespecifika villkor.

Aktia Sparbank Abp, 2004. 5/2004 Aktieobligation, lånespecifika villkor.

Aktia Sparbank Abp, 2004. P4/2004, lånespecifika villkor.

Aktia Sparbank Abp, 2004. P3/2004, lånespecifika villkor.

Aktia Sparbank Abp, 2004. 1/2004 Chinaindex, lånespecifika villkor.

Aktia Sparbank Abp, 2003. 2/2003 Globalindex, lånespecifika villkor.

Evli Pankki Oyj, 2007. Indeksilaina Evli Commodity 2011, lainakohtaiset ehdot.

Evli Pankki Oyj, 2006. Osakeindeksilaina Europe & Japan 2011 II, lainakohtaiset ehdot.

Evli Pankki Oyj, 2006. Osakeindeksilaina Europe & Japan 2011, lainakohtaiset ehdot.

Evli Pankki Oyj, 2004. Osakeindeksilaina China Basket 2009, lainakohtaiset ehdot.

FIM Pankkiiriliike Oy, 2007. Arvo Maailma Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2007. Perheyritykset Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2007. Vaihtoehtoinen Energia Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2007. Jokasään Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2007. Puhdas Vesi Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Eurolukko Suhteellinen II Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. DragonEE II Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. HOLT Sesonki Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Omaisuuslukko Trio II Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Eurolukko Suhteellinen 2011 Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Raaka-aine 2007-2011 Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Eurooppa Vakaa Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Hedge Fund 150 Indeksiobligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Sateenkaari 2011 Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. BIKE 2011 Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. SuperTrendi II Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Sesonki 2010 Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Hedge Fund Sektori Indeksiobligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Japani Voittaa 2008 Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2006. Japani & Intia 2011 Obligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2005. Hedge Fund Indeksiobligaatio, myyntiesite.

FIM Pankkiiriliike Oy, 2005. Omaisuuslukko Trio, myyntiesite.

FIM Pankkiiriliike Oy, 2005. Tuottolukko Duo Aasian Tiikerit + Eurooppa, myyntiesite.

FIM Pankkiiriliike Oy, 2005. Pörssiobligaatio SuperTrendi, myyntiesite.

FIM Pankkiiriliike Oy, 2005. Omaisuuslukko Tupla, myyntiesite.

FIM Pankkiiriliike Oy, 2005. Trendiobligaatio Omaisuuslukko MaailmaPlus, myyntiesite.

FIM Pankkiiriliike Oy, 2004. Trendiobligaatio Omaisuuslukko AasiaPlus, myyntiesite.

FIM Pankkiiriliike Oy, 2004. Trendiobligaatio Omaisuuslukko EuroPlus, myyntiesite.

FIM Pankkiiriliike Oy, 2004. Trendiobligaatio Omaisuuslukko, myyntiesite.

FIM Pankkiiriliike Oy, 2004. Pörssiobligaatio Trendilukko, myyntiesite.

FIM Pankkiiriliike Oy, 2004. Pörssiobligaatio Tuottolukko Sektori, myyntiesite.

FIM Pankkiiriliike Oy, 2004. Pörssiobligaatio Tuottolukko Aasia, myyntiesite.

FIM Pankkiiriliike Oy, 2004. Pörssiobligaatio Tuottolukko Maailma, myyntiesite.

FIM Pankkiiriliike Oy, 2003. FIM Titaanit III Pro – osakesidonnainen joukkovelkakirjalaina, myyntiesite.

FIM Pankkiiriliike Oy, 2003. FIM DragonEE 2009 – osakesidonnainen joukkovelkakirjalaina, myyntiesite.

Kuntarahoitus Oyj, 2007. Osakeindeksiobligaatio II/2007 Kuntarahoitus Hestia, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2006. Osakeindeksiobligaatio XI/2006 Kuntarahoitus Täyskäännös, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2006. Osakeindeksiobligaatio X/2006 Kuntarahoitus Kameleontti I, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2006. Osakeindeksiobligaatio VIII/2006 Kuntarahoitus Energia 2008, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2006. Osakeindeksiobligaatio IV/2006 Kuntarahoitus Kehittyvät Markkinat, lainakohtaiset ehdot.
Kuntarahoitus Oyj, 2006. Kuntaobligaatio I/2006 Valuuttaobligaatio Itä-Eurooppa, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2005. IX/2005 Kuntarahoitus Japani 2009, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2005. Kuntaobligaatiolaina VI/2005, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2004. Eurooppa osakeindeksiobligaatio XIII/2004, Yhdentyvä Eurooppa, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2004. Osakeindeksiobligaatio VIII/2004 Kuntarahoitus Pharma 6, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2004. Osakeindeksiobligaatio VII/2004 Kuntarahoitus Eurooppa 2006, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2003. Osakeindeksiobligaatio XI/2003 Kaukoitä, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2003. Osakeindeksiobligaatio IX/2003 MAAILMA 2006, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2003. Osakeindeksiobligaatio VIII/2003, Maailma, lainakohtaiset ehdot.

Kuntarahoitus Oyj, 2003. Osakeindeksiobligaatio V/2003, Suomi Classic 7, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2007. 45/2006 Aasia Infrastruktuuri Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2007. 44/2006 Aasia Infrastruktuuri Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2007. 43/2006 Arvo-osake Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2007. 42/2006 Arvo-osake Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 40/2006 Kehittyvät Markkinat Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 39/2006 Kehittyvät Markkinat Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 38/2006 Pohjoismaat Osakekori Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 37/2006 Pohjoismaat Osakekori Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 36/2006 Maailma Etappi, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 32/2006 Hyödyke Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 31/2006 Hyödyke Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 27/2006 Eurooppa Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 26/2006 Eurooppa Tuotto, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 21/2006 Kehittyvät Markkinat, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 19/2006 All Stars Aasia Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 18/2006 All Stars Aasia Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 17/2006 Pohjoismaat Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 16/2006 Pohjoismaat Tuotto, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 15/2006 Indeksilainat Kehittyvät Valuutat Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 14/2006 Indeksilainat Kehittyvät Valuutat Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 13/2006 Latinalainen Amerikka Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 12/2006 Latinalainen Amerikka Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 5/2006 Maailma Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2006. 4/2006 Maailma Tuotto, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 43/2005 Kehittyvät Markkinat Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 42/2005 Kehittyvät Markkinat Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 40/2005 Korkoputki Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 37/2005 Japani Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 36/2005 All Stars Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 35/2005 All Stars Tuotto, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 34/2005 Euro/TRY, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 28/2005 Eurooppa Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 27/2005 Eurooppa Tuotto, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 26/2005 Intia Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 24/2005 Allokaatio Ekstra Kori 1, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 23/2005 Allokaatio Perus Kori 1, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 17/2005 Kiina-Intia Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 16/2005 Osakekori, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 15/2005 Pohjoismaat Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 14/2005 Pohjoismaat Perus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 11/2005 EuroTaala, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 10/2005 Aasia Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 9/2005 Aasia Tuotto, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 8/2005 Itä-Eurooppa, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 6/2005 Maailma, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 5/2005 YhdistelmäObligaatio Eurooppa, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 4/2005, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 3/2005 OsakeLukitus, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 2/2005 Eurooppa Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2005. 1/2005 Eurooppa Tuotto, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 27/2004 Latinalainen Amerikka, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 26/2004 Latinalainen Amerikka, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 25/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 24/2004 Maailma Ekstra, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 23/2004 MaailmaTuotto, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 22/2004 Kiinteistö, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 21/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 20/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 18/2004 YhdistelmäObligaatio 125, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 16/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 14/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 13/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 12/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 10/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 8/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 7/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 5/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 3/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 2/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2004. 1/2004, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 22/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 21/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 20/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 19/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 18/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 17/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 16/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 13/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 12/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 11/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 9/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 8/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 6/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 5/2003, lainakohtaiset ehdot.

Nordea Pankki Suomi Oyj, 2003. 4/2003, lainakohtaiset ehdot.

OKO Pankki Oyj, 2007. Pharma-Obligaatio VI/2007, lainakohtaiset ehdot.

OKO Pankki Oyj, 2007. Eurooppa V/2007, lainakohtaiset ehdot.

OKO Pankki Oyj, 2007. Ympäristö-Obligaatio IV/2007, lainakohtaiset ehdot.

OKO Pankki Oyj, 2007. Kehittyvät Markkinat III/2007, lainakohtaiset ehdot.

OKO Pankki Oyj, 2007. Tutkimuksen Tähdet II/2007, lainakohtaiset ehdot.

OKO Pankki Oyj, 2007. Kiina I/2007, lainakohtaiset ehdot.

OKO Pankki Oyj, 2007. Rahasto-Obligaatio I/2007, lainakohtaiset ehdot.

OKO Pankki Oyj, 2006. Pohjoismaat VII/2006, lainakohtaiset ehdot.

OKO Pankki Oyj, 2006. Metsä VI/2006, lainakohtaiset ehdot.

OKO Pankki Oyj, 2006. Eurooppa Duo V/2006, lainakohtaiset ehdot.

OKO Pankki Oyj, 2006. Eurooppa IV/2006, lainakohtaiset ehdot.

OKO Pankki Oyj, 2006. TRIO III/2006, lainakohtaiset ehdot.

OKO Pankki Oyj, 2006. Euro-osinko II/2006, lainakohtaiset ehdot.

OKO Pankki Oyj, 2005. Optimi Allokaatio VII/2005, lainakohtaiset ehdot.

OKO Pankki Oyj, 2005. Kehittyvät Markkinat VI/2005, lainakohtaiset ehdot.

OKO Pankki Oyj, 2005. Kertyvä Korko V/2005, lainakohtaiset ehdot.

OKO Pankki Oyj, 2005. Euro-Allokaatio IV/2005, lainakohtaiset ehdot.

OKO Pankki Oyj, 2005. Korko 13 III/2005, lainakohtaiset ehdot.

OKO Pankki Oyj, 2005. Kertyvä Korko II/2005, lainakohtaiset ehdot.

OKO Pankki Oyj, 2005. Maailma I/2005, lainakohtaiset ehdot.

OKO Pankki Oyj, 2004. Korko 12 VI/2004, lainakohtaiset ehdot.

OKO Pankki Oyj, 2004. Kertyvä Korko V/2004, lainakohtaiset ehdot.

OKO Pankki Oyj, 2004. Maailma IV/2004, lainakohtaiset ehdot.

OKO Pankki Oyj, 2004. Venäjä & Kaukoitä III/2004, lainakohtaiset ehdot.

OKO Pankki Oyj, 2004. Osakekorilaina II/2004, lainakohtaiset ehdot.

OKO Pankki Oyj, 2004. Euro I/2004, lainakohtaiset ehdot.

OKO Pankki Oyj, 2003. Kiina IV/2003, lainakohtaiset ehdot.

OKO Pankki Oyj, 2003. Eurooppa Tuotto III/2003, lainakohtaiset ehdot.

OKO Pankki Oyj, 2003. Länsimaat II/2003, lainakohtaiset ehdot.

OKO Pankki Oyj, 2003. Maailma Top-4 I/2003, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2007. Sampo Pankki Uusiutuva Energia 5 vuotta, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2007. Sampo Pankki Yhdistelmäobligaatio 4 vuotta, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2006. Mandatum Kronos indeksilaina 6/2006, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2006. Mandatum Rhea indeksilaina 5/2006, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2006. Mandatum Livos indeksilaina 4/2006, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2006. Mandatum Notus indeksilaina 3/2006, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2006. Mandatum Eurus Tuottohakuinen indeksilaina 2/2006, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2006. Mandatum Eurus Konservatiivinen indeksilaina 1/2006, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2005. Mandatum Ares indeksilaina 3/2005, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2005. Mandatum Artemis osakeindeksilaina 2/2005, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2005. Mandatum Apollo indeksilaina 1/2005, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2004. Mandatum Hermes indeksilaina 6/2004, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2004. Mandatum Ahti osakeindeksilaina 3/2004, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2004. Mandatum Athene indeksilaina 2/2004, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2004. Mandatum Osakeindeksilaina 1/2004, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2003. Mandatum Olympus osakeindeksilaina 3/2003, lainakohtaiset ehdot.

Sampo Pankki Oyj, 2003. Mandatum Hera osakeindeksilaina 2/2003, lainakohtaiset ehdot.

Skandinaviska Enskilda Banken AB, 2004. SEB Global 2009 (Aktieindexlån 1/2004), Lånespecifika villkor.

Skandinaviska Enskilda Banken AB, 2004. SEB Greater China (Aktieindexlån 2/2004), Lånespecifika villkor.

Skandinaviska Enskilda Banken AB, 2004. SEB Best of Three 2010 (Aktieindexlån 3/2004), Lånespecifika villkor.

Skandinaviska Enskilda Banken AB, 2004. SEB MaxMini Europe (Aktieindexlån 4/2004), Lånespecifika villkor.

Skandinaviska Enskilda Banken AB, 2006. SEB Minimikorko 2, myyntiesite.

Skandinaviska Enskilda Banken AB, 2006. SEB Global 2011 Tuotto ja Tuotto+, myyntiesite.

Skandinaviska Enskilda Banken AB, 2006. SEB Aasia 2012 Tuotto ja Tuotto+, myyntiesite.

Skandinaviska Enskilda Banken AB, 2006. SEB USA 2011 Tuotto ja Tuotto+, myyntiesite.

Skandinaviska Enskilda Banken AB, 2007. SEB BRIC 2012 Tuotto ja Tuotto+, myyntiesite.

Suomen Hypoteekkiyhdistys, 2006. Eurooppa-Tyynivaltameri 1/2006 indeksilaina, lainakohtaiset ehdot.

Suomen Hypoteekkiyhdistys, 2004. Joukkovelkakirjalaina 1/2004 Osaketuotto, lainakohtaiset ehdot.

Svenska Handelsbanken AB (publ), 2007. Handelsbanken osakeindeksiobligaatio Pohjoismaat Top 6, lopulliset ehdot lainalle 5020.

Svenska Handelsbanken AB (publ), 2007. Handelsbanken osakeindeksiobligaatio WinWin, lopulliset ehdot lainalle 5018.

Svenska Handelsbanken AB (publ), 2007. Handelsbanken osakeindeksiobligaatio Voima, lopulliset ehdot lainalle 5016.

Svenska Handelsbanken AB (publ), 2007. Handelsbanken osakeindeksiobligaatio Kasvu, lopulliset ehdot lainalle 5015.

Svenska Handelsbanken AB (publ), 2006. Handelsbanken indeksiobligaatio Paras Kolmesta, lopulliset ehdot lainalle 5010.

Svenska Handelsbanken AB (publ), 2006. Handelsbanken osakeindeksiobligaatio Euro Lock-in, lopulliset ehdot lainalle 5007.

Svenska Handelsbanken AB (publ), 2006. Handelsbanken osakeindeksiobligaatio Suuret Markkinat, lopulliset ehdot lainalle 5005.

Svenska Handelsbanken AB (publ), 2006. Handelsbanken indeksiobligaatio Paras Kolmesta, lopulliset ehdot lainalle 5001.

Svenska Handelsbanken AB (publ), 2006. Handelsbanken Raaka-aineobligaatio, lainakohtaiset ehdot joukkovelkakirjalaina 31.

Svenska Handelsbanken AB (publ), 2006. Handelsbanken Valuuttaobligaatio Kruunu, lainakohtaiset ehdot joukkovelkakirjalaina 30.

Svenska Handelsbanken AB (publ), 2006. Handelsbanken osakeindeksiobligaatio Tyynimeri, lainakohtaiset ehdot joukkovelkakirjalaina 28.

Svenska Handelsbanken AB (publ), 2005. Handelsbanken osakeindeksiobligaatio Fennoskandia, lainakohtaiset ehdot joukkovelkakirjalaina 27.

Svenska Handelsbanken AB (publ), 2005. Handelsbanken indeksiobligaatio Paras Kolmesta, lainakohtaiset ehdot joukkovelkakirjalaina 26.

Svenska Handelsbanken AB (publ), 2005. Handelsbanken osakeindeksiobligaatio Kiina/Japani, lainakohtaiset ehdot joukkovelkakirjalaina 25.

Svenska Handelsbanken AB (publ), 2005. Handelsbanken indeksiobligaatio Paras Kolmesta, lainakohtaiset ehdot joukkovelkakirjalaina 24.

Svenska Handelsbanken AB (publ), 2005. Handelsbanken osakeindeksiobligaatio Pohjois-Eurooppa, lainakohtaiset ehdot joukkovelkakirjalaina 22.

Svenska Handelsbanken AB (publ), 2005. Handelsbanken Yrityskoriobligaatio, lainakohtaiset ehdot joukkovelkakirjalaina 21.

Svenska Handelsbanken AB (publ), 2004. Handelsbanken Osakeindeksiobligaatio AngloSaxon, lainakohtaiset ehdot joukkovelkakirjalaina 20.

Svenska Handelsbanken AB (publ), 2004. Handelsbanken Osakeindeksiobligaatio Manner-Eurooppa/Japani, lainakohtaiset ehdot joukkovelkakirjalaina 18.

Svenska Handelsbanken AB (publ), 2004. Handelsbanken vaihtuvakorkoinen obligaatio, lainakohtaiset ehdot joukkovelkakirjalaina 17.

Svenska Handelsbanken AB (publ), 2004. Handelsbanken Osakeindeksiobligaatio Maailma, lainakohtaiset ehdot joukkovelkakirjalaina 16.

Svenska Handelsbanken AB (publ), 2004. Handelsbanken Yrityskoriobligaatio, lainakohtaiset ehdot joukkovelkakirjalaina 14.

Svenska Handelsbanken AB (publ), 2003. Handelsbanken Osakeindeksiobligaatio Aasia, lainakohtaiset ehdot joukkovelkakirjalaina 12.

Svenska Handelsbanken AB (publ), 2003. Handelsbanken Osakeindeksiobligaatio Suomi Top 6, lainakohtaiset ehdot joukkovelkakirjalaina 11.

Svenska Handelsbanken AB (publ), 2002. Handelsbanken Osakeindeksiobligaatio Maailma 2006, lainakohtaiset ehdot joukkovelkakirjalaina 2002/3.

United Bankers Omaisuudenhoito Oy, 2007. UB Aasia II/2007 osakeindeksilaina, perusesite.

United Bankers Omaisuudenhoito Oy, 2007. UB WinWin osakeindeksilaina, perusesite.

United Bankers Omaisuudenhoito Oy, 2007. UB Aasia I/2007 osakeindeksilaina, perusesite.

United Bankers Omaisuudenhoito Oy, 2006. UB Pohjoismaat 2006 osakeindeksilaina, lopulliset ehdot lainalle 5009.

United Bankers Omaisuudenhoito Oy, 2006. UB Aasia I/2006 osakeindeksilaina, perusesite.

United Bankers Omaisuudenhoito Oy, 2006. UB Itä-Eurooppa I/2006 osakeindeksilaina, lainakohtaiset ehdot joukkovelkalaina 55.

United Bankers Omaisuudenhoito Oy, 2006. UB Maailma I/2006 osakeindeksilaina, perusesite.

United Bankers Omaisuudenhoito Oy, 2006. UB Eurooppa 2006 osakeindeksilaina, lopulliset ehdot lainalla 5006.

United Bankers Omaisuudenhoito Oy, 2005. UB Japani I/2005 osakeindeksilaina, perusesite.

United Bankers Omaisuudenhoito Oy, 2005. UB Valuuttaobligaatio Kehittyvät Maat, perusesite.

United Bankers Omaisuudenhoito Oy, 2004. UB Maailma I/2004 osakeindeksilaina, perusesite.

Ålandsbanken Abp, 2007. Aktieindexobligation Alternativ Energi, lånespecifika villkor.

Ålandsbanken Abp, 2007. Aktieindexobligation Best of Two, lånespecifika villkor.

Ålandsbanken Abp, 2006. Aktieindexobligation WIN-WIN, lånespecifika villkor.

Ålandsbanken Abp, 2006. Aktieindexobligation Dividend, lånespecifika villkor.

Ålandsbanken Abp, 2006. Aktieindexobligation Tyskland, lånespecifika villkor.

Ålandsbanken Abp, 2006. Aktieindexobligation Victoria, lånespecifika villkor.

Ålandsbanken Abp, 2005. Take It Easy, lånespecifika villkor.

Ålandsbanken Abp, 2005. Aktieindexobligation Energy, lånespecifika villkor.

Ålandsbanken Abp, 2005. Ränteobligation SERVO, lånespecifika villkor.

Ålandsbanken Abp, 2005. Ränteobligation PLUS, lånespecifika villkor.

Ålandsbanken Abp, 2005. Ränteobligation UPSIDE, lånespecifika villkor.

Ålandsbanken Abp, 2005. Ränteobligation REMIX, lånespecifika villkor.
Ålandsbanken Abp, 2005. Nordic Blue Chip 30, lånespecifika villkor.

Ålandsbanken Abp, 2004. Ränteobligation MIX, lånespecifika villkor.

Ålandsbanken Abp, 2004. Aktieindexobligation Finland, lånespecifika villkor.

Ålandsbanken Abp, 2004. Ränteobligation SVEA, lånespecifika villkor.

Ålandsbanken Abp, 2004. Specialränta Obligation, lånespecifika villkor.

Ålandsbanken Abp, 2004. Europa-Kina, lånespecifika villkor.

Ålandsbanken Abp, 2004. Aktieindexobligation Bonus, lånespecifika villkor.

Ålandsbanken Abp, 2004. Best of Sectors, lånespecifika villkor.

Ålandsbanken Abp, 2003. Medical, lånespecifika villkor.

Ålandsbanken Abp, 2003. Aktieindexobligation USA Ränta, lånespecifika villkor.

Ålandsbanken Abp, 2003. USA 2003-2007, lånespecifika villkor.

Ålandsbanken Abp, 2003. Europa 2003-2006, lånespecifika villkor.

Ålandsbanken Abp, 2003. Europa Ränta, lånespecifika villkor.

Appendixes

Appendix A

Principal protected structured notes' payout calculation features

Return is linked to:

(A) Index, indexes, stocks or basket of stocks
(B) Bull Bear – strategy
(C) Outperformance of one index over another

Final value calculation features

(1) Asian option (Average)
(2) Last inspection date
(3) Floored return, global (other than principal protection)
(4) Capped return, global / Capped call / Call spread
(5) Floored return per underlying
(6) Capped return per underlying
(7) Local cap
(8) Local floor
(9) Cliquet
(10) Reverse Cliquet
(11) Ladder option
(12) Himalaya structure
(13) Altiplano structure
(14) Binary / Digital option
(15) Knock-in option
(16) Knock-out option, no compensation
(17) Knock-out option, minor rebate
(18) Knock-out call, accumulated return barrier
(19) Callable
(20) Worst-of option
(21) Rainbow / Best-of option, a basket of same asset class underlying assets, weightings are set at the end of note.
(22) Rainbow / Best-of option, Hybrid option, a basket of different asset classes, weightings are set at the end of note.
(23) Rainbow / Best-of option, Hybrid option, many baskets of different asset classes. The return is based on the best basket.
(24) Rebalancing / Best-of option. Indexes are rebalanced at the end of each period according their past performance.
(25) Range Accrual option / Corridor option / Range note
(26) Accumulator inverse floater
(27) Ratchet floater
(28) Periodical payment of return (at least once a year)

(29) Fixed return, part of products lifetime.
(30) Some of the best returns are removed from the final value calculations or replaced with fixed return.
(31) A fixed amount is subtracted from the final value calculations.
(32) Return is linked to the absolute value of percentage change of the least changed underlying asset
(33) Variable participation rate subject to magnitude of the underlying performance.
(34) Fixed periodic payments (above current interest rate levels) if all the underlying assets are at least at the starting level. If not, payment is postponed to a later point in time. All missed payments are payable at a later point in time if all underlying assets are then above starting level. If that do not happen during note's lifetime, only principal is paid at maturity.
(35) Fixed local value if performances of all the underlying assets are positive compared with the previous value.
(36) Exotic, some other than above mentioned

Appendix B

Utilized underlying equity assets, times used, country/regional area and classification between developed, emerging and both according to Morgan Stanley and The Economist.

Underlying	Times used	Country / Regional Area	Morgan Stanley	The Economist
DJ Euro Stoxx 50 Index	88	Eurozone	Developed	Developed
S&P 500	50	USA	Developed	Developed
TOPIX (Tokyo Price Index)	43	Japan	Developed	Developed
Equally weighted equity basket, 5-20 stocks	39	*	Developed	Developed
FTSE Xinhua China 25	37	China	Emerging	Emerging
Nikkei 225 Stock Average (Japan)	32	Japan	Developed	Developed
FTSE 100 (UK)	20	UK	Developed	Developed
Kospi 200 (Korea Stock Price Index)	17	South Korea	Emerging	Emerging
CeceEur index (Czech, Hungarian and Polish Traded indices, Wiener Börse)	16	Czech, Hungary and Poland	Emerging	Emerging
DJ Euro Stoxx Select Dividend 30 Index	12	Eurozone	Developed	Developed
MSCI Taiwan	11	Taiwan	Emerging	Emerging
S&P CNX Nifty (India)	10	India	Emerging	Emerging
S&P BRIC 40	9	Brazil, Russia, India, China	Emerging	Emerging
SMI (Swiss Market Index)	9	Switzerland	Developed	Developed
Hang Seng (Hong Kong)	8	Hong Kong	**Developed**	**Emerging**
FTSE Latibex Top Index (Latin-America)	7	Argentina, Brazil, Chile, Mexico, Panama, Peru, Puerto Rico and Venezuela	Emerging	Emerging
OMXH25 (Previously HEX25, Finland)	7	Finland	Developed	Developed
RTX (Russian Traded Index, Wiener Börse)	7	Russia	Emerging	Emerging
DJ Stoxx Nordic 30	6	Denmark, Iceland, Norway, Sweden and Finland	Developed	Developed
S&P ASX 200 (Australia)	6	Australia	Developed	Developed
HSCE (Hang Seng China Enterprises)	5	China	Emerging	Emerging
MSCI Singapore	5	Singapore	**Developed**	**Emerging**
iShares S&P Latin America 40 Index Fund	4	Mexico, Brazil, Chile, Argentina	Emerging	Emerging
OMXS30 (Sweden)	4	Sweden	Developed	Developed
RDX (Russian Depositary Index, Wiener Börse)	4	Russia	Emerging	Emerging
DJ Stoxx 600 Financial Services PI	3	European region: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom	Developed	Developed
DJ Stoxx 600 Healthcare PI	3	European region: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom	Developed	Developed
DJ Stoxx 600 Technology PI	3	European region: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom	Developed	Developed
DJ Stoxx 600 Telecommunications PI	3	European region: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom	Developed	Developed
OBX (Norway)	3	Norway	Developed	Developed
SET50 Index (Thailand)	3	Thailand	Emerging	Emerging
CTX (Czech Traded Index, Wiener Börse)	2	Czech	Emerging	Emerging
DivDAX Price (Germany)	2	Germany	Developed	Developed
DJ Europe Stoxx Healthcare PI	2	European region	Developed	Developed
DJ Global Titans 50	2	Global	Developed	Developed

Underlying	Times used	Country / Regional Area	Morgan Stanley	The Economist
DJ Stoxx 600 Food and Beverage PI	2	European region: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom	Developed	Developed
DJ Stoxx Nordic Blue Chip 30	2	Denmark, Finland, Iceland, Norway and Sweden.	Developed	Developed
DJ Stoxx Select Dividend 30 Index EUR	2	Eurozone: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.	Developed	Developed
Equally weighted equity basket: Forest, 4 stocks: International Paper Co, Stora Enso Oyj, UPM-Kymmene Oyj, Svenska Cellulosa AB	2	Global	Developed	Developed
Equally weighted equity basket: Pharma, 6 stocks: Merck, Pfizer, Wyeth, AstraZeneca, Novartis, Sanofi-Synthelabo	2	Global	Developed	Developed
Equally weighted equity basket: Pharma, 8 stocks: Astellas Pharma Inc, Bristol-Myers Squibb Company, GlaxoSmithKline plc, Novartis International AG, Orion Oyj, Pfizer Inc, Roche Holding Ltd ja Takeda Pharmaceutical Co Ltd	2	Global	Developed	Developed
FTSE Nordic 30	2	Sweden, Denmark, Norway and Finland	Developed	Developed
Hansa Eastern Europe Equity Fund	2	Eastern Europe	Emerging	Emerging
HTX (Hungarian Traded Index, Wiener Börse)	2	Hungary	Emerging	Emerging
Mandatum Eastern Europe Fund	2	Poland, Hungary, Czech, Slovenia	Emerging	Emerging
Mandatum Russia Fund	2	Russia	Emerging	Emerging
PTX (Polish Traded Index, Wiener Börse)	2	Poland	Emerging	Emerging
S&P All Stars Asia	2	Asian region	Both	Both
S&P All Stars Europe	2	European region	Developed	Developed
S&P Emerging Markets IFC Investable India	2	India	Emerging	Emerging
S&P TSX 60 (Canada)	2	Canada	Developed	Developed
Bovespa Brazil	1	Brazil	Emerging	Emerging
Credit Suisse Family Index	1	North America&Europe	Developed	Developed
Credit Suisse Global Alternative Energy Index	1	Global	Both	Both
Credit Suisse Water Index	1	Global	Both	Both
DJ Euro Stoxx Chemicals PI	1	Eurozone: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.	Developed	Developed
DJ Euro Stoxx Oil & Gas PI	1	Eurozone: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.	Developed	Developed
DJ Euro Stoxx Retail PI	1	Eurozone: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.	Developed	Developed
DJ Euro Stoxx Technology PI	1	Eurozone: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.	Developed	Developed
DJ Stoxx 600 Media PI	1	European region: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.	Developed	Developed
DJ Stoxx 600 Utilities PI	1	European region: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.	Developed	Developed

Underlying	Times used	Country / Regional Area	Morgan Stanley	The Economist
DJ Stoxx Global Select Dividend 100	1	Global	Developed	Developed
DJ Stoxx Nordic Select Dividend 20 Price Index EUR	1	Denmark, Iceland, Norway, Sweden and Finland	Developed	Developed
DJ U.S. Telecommunications Sector Index Fund	1	USA	Developed	Developed
EPRA Europe Index (European Public Real Estate Association)	1	European region	Developed	Developed
Equally weighted equity basket: Alternative energy, 3 stocks: Archer-Daniels-Midland Co, Solarworld AG, Gamesa Corporation Technologica SA	1	Global	Both	Both
Equally weighted equity basket: Energy, 5 stocks: BP Plc, Total SA, EXXON Mobil Corp, Royal Dutch Shell Plc A SHS, ENI Spa	1	Global	Developed	Developed
Equally weighted equity basket: Mining, 3 stocks: BHP Billiton, Rio Tinto Plc, Anglo American Plc	1	Global	Both	Both
Equally weighted equity basket: Oil, 3 stocks: Exxon Mobile Corp, Total SA, OAO Gazprom	1	Global	Both	Both
Equally weighted equity basket: Pharma, 6 stocks: Bayer, Merck, Bristol Myers Squibb, Schering-Plough, GlaxoSmithKline, Johnson&Johnson	1	Global	Developed	Developed
HS60 Europe Index, powered by HOLT	1	European Economic Area or Switzerland	Developed	Developed
iShares MSCI China Tracker	1	China	Emerging	Emerging
Nomura Pacific Value Index	1	Asia-Pacific	Developed	Developed
Select Sector SPDR: Financial	1	USA	Developed	Developed
Select Sector SPDR: Healthcare	1	USA	Developed	Developed
Stock: Nokia Corp	1	Finland	Developed	Developed
TOPIX Small Index (Tokyo)	1	Japan	Developed	Developed
	540			

Appendix C

List of all observed payout features in terms of distributor. The payout features' numbers and letters are explained in Appendix A.

Number of notes in terms of payout structure and distributor

All Assets	(A)	(B)	(C)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	Distributed notes
Aktia	17		1	4	2	4	2		2	5	4	4	1	1			2				1	1							1		2	4	2		2	1			1	18
Bank of Åland	39	2		29	5	8	7			2	2	2	1		2		1			2					4		1			2	1					2				41
Evli	5			5				1	1		2	2			1																									5
FIM	30	1	5	17	6	5	2			1	1	10	1	16		1			1		1		3	3		2	7					3	11				3	3	35
Handelsbanken	34			32	1				5	2	1	2		1			1				1					8			1		3							2	38
Mortgage Society	2	2		1						1	1						1															1							1	2
Municipality Finance	16			10	2	1	1	1				4					1							3									4							16
Nordea	83			65	5	11				4	1	4		2			2	1		1	3	3				2		5	1	1	8					2	1		2	85
OKO	49	2	4	24	14	8			6	6	6	12		6	2		2			2	2	1			1	2		3	2	1	5		6	2		4			1	55
Sampo	17			8	5		1			1		3					1							1	2		1				1		3			1			4	17
SEB	13			11		2	1				2		1											1							1									13
United Bankers	16	2		17	1		1																																	18
TOTAL	321	9	10	223	41	39	15	2	14	22	20	43	4	26	5	1	11	1	1	5	8	5	3	8	3	18	8	9	5	2	22	6	18	13	2	8	3	3	14	343

Appendix D

The contents and weightings of Dow Jones AIG Commodity Index as of January 2008

The Dow Jones - AIG Commodity Index[SM] 2008 Commodity Index Percentages	
Natural Gas	12,237084%
Crude Oil	13,156592%
Gasoline	3,783798%
Heating Oil	3,822525%
Live Cattle	4,887400%
Lean Hogs	2,548123%
Wheat	4,703406%
Corn	5,663457%
Soybeans	7,628541%
Soybean Oil	2,811933%
Aluminum	7,107971%
Copper	7,040516%
Zinc	3,033016%
Nickel	2,791708%
Gold	7,396190%
Silver	2,721423%
Sugar	3,185145%
Cotton	2,479588%
Coffee	3,001585%

Appendix E

Number of notes, their maturities and effective final value calculation's point in time divided by maturity of notes (%)

	Equities		Mixed		Commodity		Hedge		Strategy		Average, weighted	
	Average maturity & (number of notes)	Effective final value's point in time & proportion	Average maturity & (number of notes)	Effective final value's point in time & proportion	Average maturity & (number of notes)	Effective final value's point in time & proportion	Average maturity & (number of notes)	Effective final value's point in time & proportion	Average maturity & (number of notes)	Effective final value's point in time & proportion	Average maturity & (number of notes)	Effective final value's point in time & proportion
Aktia Savings Bank	3,02	1,61			4,28	3,96					3,65	2,79
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(2)	53,4 %	(0)		(2)	92,5 %	(0)		(0)		(4)	76,3 %
Evli Bank	5,07	3,75			4,06	2,51					4,87	3,50
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(4)	74,0 %	(0)		(1)	61,7 %	(0)		(0)		(5)	72,0 %
FIM Group	5,71	3,28	5,57	3,00			5,18	3,80			5,59	3,32
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(11)	57,3 %	(3)	53,9 %	(0)		(3)	73,2 %	(0)		(17)	59,3 %
Mortgage Society (&)	6,01	4,94									6,01	4,94
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(1)	82,2 %	(0)		(0)		(0)		(0)		(1)	82,2 %
Municipality Finance (&)	4,92	3,93									4,92	3,93
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(10)	79,8 %	(0)		(0)		(0)		(0)		(10)	79,8 %
Nordea Bank Finland	4,61	3,14	4,99	4,45	4,02	2,83					4,57	3,15
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(58)	68,1 %	(2)	89,0 %	(5)	70,4 %	(0)		(0)		(65)	69,0 %
OKO Bank	4,98	2,93	5,06	2,75					6,07	5,51	5,03	3,03
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(22)	58,9 %	(1)	54,4 %	(0)		(0)		(1)	90,8 %	(24)	60,3 %
Sampo Bank & Mandatum	3,86	3,09	6,06	3,50					5,06	4,51	4,28	3,32
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(6)	80,1 %	(1)	57,8 %	(0)		(0)		(1)	89,0 %	(8)	77,4 %
SEB & Gyllenberg	5,33	2,94									5,33	2,94
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(11)	55,2 %	(0)		(0)		(0)		(0)		(11)	55,2 %
Svenska Handelsbanken	4,66	4,25	5,08	4,52	5,03	4,70					4,79	4,35
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(22)	91,3 %	(8)	88,9 %	(2)	93,5 %	(0)		(0)		(32)	90,8 %
United Bankers	4,86	4,02									4,86	4,02
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(17)	82,7 %	(0)		(0)		(0)		(0)		(17)	82,7 %
Bank of Åland	3,70	2,37	4,32	2,41							3,79	2,38
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(25)	64,1 %	(4)	55,8 %	(0)		(0)		(0)		(29)	62,8 %
Average, weighted	4,66	3,26	5,04	3,68	4,28	3,40	5,18	3,80	5,57	5,01	4,69	3,33
(Number of notes) & Effective final value's point in time divided by the maturity of the note (%)	(189)	70,1 %	(19)	73,0 %	(10)	79,4 %	(3)	73,2 %	(2)	90,0 %	(223)	71,0 %

Appendix F

Number of traditional and more complex notes and proportion in terms of year of issuance and distributor

All Assets	2002 - 2003				2004				2005				2006				2007				Total					
	T	%	C	%	T	%	C	%	T	%	C	%	T	%	C	%	T	%	C	%	T	%	C	%	TOT	%
Aktia Savings Bank	0	0,0	1	5,0	0	0,0	4	10,0	2	7,4	5	10,4	2	3,9	1	1,9	1	5,0	2	6,7	5	3,3	13	6,8	18	5,2
%	0,0	0,0	7,7	5,6	0,0	0,0	30,8	22,2	40,0	11,1	38,5	27,8	40,0	11,1	7,7	5,6	20,0	5,6	15,4	11,1	100	27,8	100	72,2		
Evli Bank	0	0,0	0	0,0	2	6,3	0	0,0	0	0,0	0	0,0	0	0,0	2	3,8	0	0,0	1	3,3	2	1,3	3	1,6	5	1,5
%	0,0	0,0	0,0	0,0	100,0	40,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	66,7	40,0	0,0	0,0	33,3	20,0	100	40,0	100	60,0		
FIM Group	1	4,5	1	5,0	0	0,0	7	17,5	0	0,0	6	12,5	0	0,0	13	24,5	3	15,0	4	13,3	4	2,6	31	16,2	35	10,2
%	25,0	2,9	3,2	2,9	0,0	0,0	22,6	20,0	0,0	0,0	19,4	17,1	0,0	0,0	41,9	37,1	75,0	8,6	12,9	11,4	100	**11,4**	100	**88,6**		
Mortgage Society (&)	0	0,0	0	0,0	0	0,0	1	2,5	0	0,0	0	0,0	1	2,0	0	0,0	0	0,0	0	0,0	1	0,7	1	0,5	2	0,6
%	0,0	0,0	0,0	0,0	0,0	0,0	100,0	50,0	0,0	0,0	0,0	0,0	100,0	50,0	0,0	0,0	0,0	0,0	0,0	0,0	100	50,0	100	50,0		
Municipality Finance (&)	2	9,1	1	5,0	3	9,4	1	2,5	1	3,7	1	2,1	2	3,9	4	7,5	0	0,0	1	3,3	8	5,3	8	4,2	16	4,7
%	25,0	12,5	12,5	6,3	37,5	18,8	12,5	6,3	12,5	6,3	12,5	6,3	25,0	12,5	50,0	25,0	0,0	0,0	12,5	6,3	100	50,0	100	50,0		
Nordea Bank Finland	10	45,5	5	25,0	11	34,4	6	15,0	13	48,1	13	27,1	16	31,4	7	13,2	4	20,0	0	0,0	54	35,5	31	16,2	85	24,8
%	18,5	11,8	16,1	5,9	20,4	12,9	19,4	7,1	24,1	15,3	41,9	15,3	29,6	18,8	22,6	8,2	7,4	4,7	0,0	0,0	100	63,5	100	36,5		
OKO Bank	2	9,1	6	30,0	2	6,3	8	20,0	2	7,4	8	16,7	4	7,8	10	18,9	4	20,0	9	30,0	14	9,2	41	21,5	55	16,0
%	14,3	3,6	14,6	10,9	14,3	3,6	19,5	14,5	14,3	3,6	19,5	14,5	28,6	7,3	24,4	18,2	28,6	7,3	22,0	16,4	100	25,5	100	74,5		
Sampo Bank & Mandatum	0	0,0	2	10,0	2	6,3	2	5,0	0	0,0	3	6,3	3	5,9	3	5,7	0	0,0	2	6,7	5	3,3	12	6,3	17	5,0
%	0,0	0,0	16,7	11,8	40,0	11,8	16,7	11,8	0,0	0,0	25,0	17,6	60,0	17,6	25,0	17,6	0,0	0,0	16,7	11,8	100	29,4	100	70,6		
SEB & Gyllenberg	0	0,0	0	0,0	2	6,3	2	5,0	0	0,0	0	0,0	4	7,8	3	5,7	2	10,0		0,0	8	5,3	5	2,6	13	3,8
%	0,0	0,0	0,0	0,0	25,0	15,4	40,0	15,4	0,0	0,0	0,0	0,0	50,0	30,8	60,0	23,1	25,0	15,4	0,0	0,0	100	61,5	100	38,5		
Svenska Handelsbanken	2	9,1	1	5,0	5	15,6	2	5,0	3	11,1	6	12,5	6	11,8	6	11,3	1	5,0	6	20,0	17	11,2	21	11,0	38	11,1
%	11,8	5,3	4,8	2,6	29,4	13,2	9,5	5,3	17,6	7,9	28,6	15,8	35,3	15,8	28,6	15,8	5,9	2,6	28,6	15,8	100	44,7	100	55,3		
United Bankers	0	0,0	0	0,0	1	3,1	0	0,0	1	3,7	1	2,1	9	17,6	0	0,0	4	20,0	2	6,7	15	9,9	3	1,6	18	5,2
%	0,0	0,0	0,0	0,0	6,7	5,6	0,0	0,0	6,7	5,6	33,3	5,6	60,0	50,0	0,0	0,0	26,7	22,2	66,7	11,1	100	**83,3**	100	**16,7**		
Bank of Åland	5	22,7	3	15,0	4	12,5	7	17,5	5	18,5	5	10,4	4	7,8	4	7,5	1	5,0	3	10,0	19	12,5	22	11,5	41	12,0
%	26,3	12,2	13,6	7,3	21,1	9,8	31,8	17,1	26,3	12,2	22,7	12,2	21,1	9,8	18,2	9,8	5,3	2,4	13,6	7,3	100	46,3	100	53,7		
Total	22	100	20	100	32	100	40	100	27	100	48	100	51	100	53	100	20	100	30	100	152	100	191	100	343	100
%	14,5	6,4	10,5	5,8	21,1	9,3	20,9	11,7	17,8	7,9	25,1	14,0	33,6	14,9	27,7	15,5	13,2	5,8	15,7	8,7	100	44,3	100	55,7		
% T or C		52,4		47,6		44,4		55,6		36,0		64,0		49,0		51,0		40,0		60,0		44,3		55,7		

Appendix G

Number of notes and proportion of Traditional or Complex in Emerging Market-classes 0% and 100% per distributor

Emerging Market Class

T=Traditional; C=Complex	EM 0%				EM 100%				TOTAL					
	T	**%**	**C**	**%**	**T**	**%**	**C**	**%**	**T**	**%**	**C**	**%**	**Total**	**%**
Aktia, number of notes, % of column	0	0,0	7	7,2	2	7,4	3	27,3	2	1,8	10	9,3	12	5,5
% of T/C per TOT T/C and %of EM group	0,0	0,0	70,0	100,0	100,0	40,0	30,0	60,0	16,7	16,7	83,3	83,3	100,0	
Evli, number of notes, % of column	0	0,0	2	2,1	0	0,0	0	0,0	0	0,0	2	1,9	2	0,9
% of T/C per TOT T/C and %of EM group		0,0	100,0	100,0			0,0		0,0	0,0	100,0	100,0	100,0	
FIM, number of notes, % of column	1	1,2	13	13,4	2	7,4	0	0,0	3	2,7	13	12,0	16	7,3
% of T/C per TOT T/C and %of EM group	33,3	7,1	100,0	92,9	66,7	100,0	0,0	0,0	18,8	18,8	81,3	81,3	100,0	
Mortgage Society, number of notes, % of colu	1	1,2	1	1,0	0	0,0	0	0,0	1	0,9	1	0,9	2	0,9
% of T/C per TOT T/C and %of EM group	100,0	50,0	100,0	50,0	0,0		0,0		50,0	50,0	50,0	50,0	100,0	
Municipality Finance, number of notes, % of	4	4,8	4	4,1	2	7,4	0	0,0	6	5,4	4	3,7	10	4,6
% of T/C per TOT T/C and %of EM group	66,7	50,0	100,0	50,0	33,3	100,0	0,0	0,0	60,0	60,0	40,0	40,0	100,0	
Nordea, number of notes, % of column	28	33,3	14	14,4	16	59,3	1	9,1	44	39,6	15	13,9	59	26,9
% of T/C per TOT T/C and %of EM group	63,6	66,7	93,3	33,3	36,4	94,1	6,7	5,9	74,6	74,6	25,4	25,4	100,0	
OKO, number of notes, % of column	10	11,9	22	22,7	2	7,4	6	54,5	12	10,8	28	25,9	40	18,3
% of T/C per TOT T/C and %of EM group	83,3	31,3	78,6	68,8	16,7	25,0	21,4	75,0	30,0	30,0	70,0	70,0	100,0	
Sampo, number of notes, % of column	3	3,6	3	3,1	0	0,0	1	9,1	3	2,7	4	3,7	7	3,2
% of T/C per TOT T/C and %of EM group	100,0	50,0	75,0	50,0	0,0	0,0	25,0	100,0	42,9	42,9	57,1	57,1	100,0	
SEB, number of notes, % of column	3	3,6	3	3,1	2	7,4	0	0,0	5	4,5	3	2,8	8	3,7
% of T/C per TOT T/C and %of EM group	60,0	50,0	100,0	50,0	40,0	100,0	0,0	0,0	62,5	62,5	37,5	37,5	100,0	
Handelsbanken, number of notes, % of colum	10	11,9	9	9,3	1	3,7	0	0,0	11	9,9	9	8,3	20	9,1
% of T/C per TOT T/C and %of EM group	90,9	52,6	100,0	47,4	9,1	100,0	0,0	0,0	55,0	55,0	45,0	45,0	100,0	
United Bankers, number of notes, % of colum	7	8,3	2	2,1	0	0,0	0	0,0	7	6,3	2	1,9	9	4,1
% of T/C per TOT T/C and %of EM group	100,0	77,8	100,0	22,2	0,0		0,0		77,8	77,8	22,2	22,2	100,0	
Bank of Åland, number of notes, % of column	17	20,2	17	17,5	0	0,0	0	0,0	17	15,3	17	15,7	34	15,5
% of T/C per TOT T/C and %of EM group	100,0	50,0	100,0	50,0	0,0		0,0		50,0	50,0	50,0	50,0	100,0	
Total, number of notes, % of column	84	100,0	97	100,0	27	100,0	11	100,0	111	100,0	108	100,0	219	100,0
% of T/C per TOT T/C and %of EM group	75,7	**46,4**	89,8	**53,6**	24,3	**71,1**	10,2	**28,9**	100,0	**50,7**	100,0	**49,3**	100,0	

Appendix H

H1:

2003		2004		2005		2006		2007	
trad	complex	trad	complex	trad	complex	trad	complex	trad	complex
22	20	32	40	27	48	51	53	20	30
	0,4761905		0,5555556		0,64		0,5096154		0,6
		P	0,5291005	P	0,6016162	P	0,5715804	P	0,5422845
		N1	40	N1	48	N1	53	N1	30
		N2	20	N2	40	N2	48	N2	53
		P1	0,5555556	P1	0,64	P1	0,5096154	P1	0,6
		P2	0,4761905	P2	0,5555556	P2	0,64	P2	0,5096154
		Z	**0,5805847**	**Z**	**0,8056933**	**Z**	**-1,3223636**	**Z**	**0,7940404**
		p	**0,7192399**	**p**	**0,7897902**	**p**	**0,0930236**	**p**	**0,7864141**

Ho: $\Pi_1 = \Pi_2$ Ho: Stands Ho: Stands Ho: Stands Ho: Stands

H_1: $\Pi_1 < \Pi_2$ - No statistically significant change

H2: Ho: $\Pi = \Pi o$

H1: $\Pi <> \Pi o$

FIM			**UB**		
Πo	0,5194805	Average without FIM	Πo	0,5784615	Average without UB
n	308		n	325	
Π	0,8857143		Π	0,1666667	
Z	**12,864521**		**Z**	**9,3048122**	
P	**4,612E-37 =0**		**P**	**6,315E-20 =0**	

- Ho is rejected in both cases

H3: Ho: $\Pi = \Pi o$

H1: $\Pi <> \Pi o$

SEB			**Handelsbanken**		
Πo	0,7192527	Average without SEB	Πo	0,6758737	Average without SHB
n	212		n	191	
Π	0,5521179		Π	0,9078762	
Z	**-5,4154739**		**Z**	**6,8504545**	
P	**3,063E-08 =0**		**P**	**2,573E-11 =0**	

- Ho is rejected in both cases

H4: Ho: $\Pi_{EM} > \Pi_D$

H1: $\Pi_{EM} <= \Pi_D$

EM 0%		**EM 100%**	
trad	complex	trad	complex
84	97	27	11
0,4640884	0,5359116	0,7105263	0,2894737
		P	0,5108114
		Z	**-1,5495636**
		p	**0,0606232**

- Ho is rejected

Glossary

Accumulator Inverse Floater A Target Return structure that offers a high fixed coupon in the first year and coupons based on a fixed rate minus a floating rate (eg 6m Euribor) thereafter. The structure is usually redeemed early if a pre-determined aggregate coupon is reached, otherwise a coupon will be paid at maturity that will bring the total coupon level up to the pre-determined fixed aggregate coupon.

Altiplano A return based on a fixed coupon at maturity provided none of the assets in the basket have fallen. If, however, a specified number of the elements in the basket did fall then the return is calculated on a different basis, usually by a call type payout. More complicated products offer different participations based on the number of assets which break a predetermined barrier.

Annapurna An Annapurna is a kind of mountain range product, which offers a return equal to the greater of a capital guarantee plus a fixed coupon and a participation in the performance of the underlying basket. The level of the fixed coupon and of the participation rate in the performance depend on if and when the worst-performing stock breaches a downside barrier. The later the breach, the higher the fixed coupon and equity participation rate.

Atlas A call option which, at maturity, will remove some of the best and some of the worst stocks in the basket.

Average option known also as **Asian-, Average price-, Average rate-** and **Average strike option.** A plain vanilla option pays out the difference between its predetermined strike price and the spot rate (or price) of the underlying at the time of expiry. The purchaser of an average option (average price, average strike, average hybrid, average ratio), on the other hand, will receive a payout, which depends on the average value of the underlying. The average can be calculated in a number of ways (arithmetic or geometric, weighted or simple) from the spot rate on a predetermined series of dates. An average rate (or average price) option is a cash settled option with a predetermined (i.e. fixed) strike, which is exercised at expiry against the average value of the underlying over the specified dates. In general, hedging with an average option is cheaper than using a portfolio of vanilla options, since the averaging process offsets high values with low ones and therefore lowers volatility and premium. Average options, also known as Asian options, are particularly popular in the equity, currency and commodity markets. In contrast, the strike for an average strike option is not fixed until the end of the averaging period, which is typically much before the expiry. When the strike is set, the option is exercised against the prevailing spot rate. Unlike average price options, average strike options may be either cash or physically settled. In the case of an average hybrid option (also known as an average-in/average-out option), both the strike and settlement price of the option are determined using the average, where the strike averaging period typically precedes the settlement price averaging period. For the average ratio option, both the strike and settlement price of the option are determined using the average as in the hybrid case. The final payout is determined by comparing the ratio of settlement price to strike and a fixed percent strike.

Barrier option Barrier options, also known as knock-out, knock-in or trigger options, are path dependent options which are either activated (knocked-in) or terminated (knocked-out) if a specified spot rate reaches a specified trigger level (or levels) between inception and expiry. Before termination knock-out options behave identically to standard European-style options, but

carry lower initial premiums because they may be extinguished before reaching maturity. In contrast, knock-in options behave identically to European style options only if they are activated/knocked-in and so also command a lower premium.
The standard barrier options have barrier levels that are monitored continually during the lifetime of the option. Single barrier options that have a barrier level above current spot are classified as up-and-out or up-and-in options. For single barriers below spot the usual terminology is down-and-out for the knock-out barrier option, and down-and-in for the knock-in barrier option.
Many variations on the barrier theme are available. Barrier levels can be monitored continually, at discrete fixing times (discrete barrier options) or only at the final expiry date of the option (at expiry barrier options). Barriers may be active only during distinct time intervals (window barrier options) or may change value at fixed points during the lifetime of the option (stepped barrier options). Barriers may need to be breached for a certain time before they are considered triggered (Parisian Barrier Options) or may allow for partial triggering depending upon how far beyond the trigger level the underlying asset is observed (Soft Barrier options). Barriers may reference a different underlying to that of the option itself –such barriers are known as outside barriers.

Basket option An option for which the underlying is more than one stock or index.

Best-of option A best-of option pays out on the best performing of a number of underlying assets over an agreed period of time. For instance, if a basket contains stock A, stock B and stock C and stock B gains in value by the larger amount during the products term, then the payout would be based on the increase in value of Stock B.

Binary option Unlike simple options, which have continuous payout profiles, that of a binary option is discontinuous and pays out a fixed amount if the underlying satisfies a predetermined trigger condition but nothing otherwise. Binary options are also known as digital or all-or-nothing options. There are two major forms: at maturity and one-touch. At maturity binaries, also known as European binaries or at expiry binaries, pay out only if the spot trades above (or below) the trigger level at expiry. One-touch binary options, also known as American binaries, pay out if the spot rate trades through the trigger level at any time up to and including expiry. The payout of a one-touch binary may be due as soon as the trigger condition is satisfied or alternatively at expiry (one-touch immediate or one-touch deferred binaries). As with barrier options, variations on the theme include discrete binaries, stepped binaries, etc. Binary options are frequently combined with other instruments to create structured products, such as contingent premium options.

Bull Bear A return based on a percentage change of the rise, as well as a percentage change of the fall, in the underlying.

Call spread A strategy that reduces the cost of buying a call option by selling another call at a higher strike price (Bull call spread). This limits potential gain if the underlying goes up, but the premium received from selling the out-of-the-money call partly finances the at-the-money call. A call spread may be advantageous if the purchaser thinks there is only limited upside in the underlying. Alternatively a Bear call spread can be constructed by selling a call option and buying another at a higher strike price.

Cliquet A structure where the investment period is divided into equal periods and the performance in each specific period is used to calculate the coupon at maturity. The performances, both negative and positive, for all periods are summed and paid out at maturity. Performances can be subject to a Local Cap and/or a Global/Local Floor.

Everest Gives the option holder a payoff on the worst performing member of a large basket of stocks at maturity. The main characteristic difference between the Everest and its predecessors is that the Everest is very long term (10-15 years) and the basket contains numerous stocks (usually 10-25 stocks).

Forward start option An option that gives the purchaser the right to receive, after a specified time, a standard put or call option. The option's strike price is set at the time the option is activated, rather than when it is purchased. The strike level is usually set at a certain fixed percentage in or out of the money relative to the prevailing spot rate at the time the strike is activated.

Global Floor A minimum overall return irrespective of the calculation of the individual periodic returns. This term is mostly associated with cliquet products.

Himalaya A structure that pays a coupon at maturity based on the arithmetic average of the performance of the best-performing underlying in each specific period during the product's term. Once an asset has been designated the best performer in a particular period, it is removed from the basket for all subsequent periods.

Hybrid products Hybrid products are constructed from a combination of interest rate, commodity, equity, credit and currency derivatives.

Inverse floater The payments made on an inverse floating rate note, floater, decrease as the reference interest rate increases, the reverse of the typical case where the payments rise with the reference rate. The purchaser of an inverse floating rate note is in effect selling interest rate caps – this will increase the coupon payments in a stable or lower interest rate environment, but reduce them should interest rates rise. Typically, the payment is found by a fixed rate minus two times the reference rate. The floater can be further leveraged by using a multiplier higher than two.

Ladder Option An option that locks in the return as the underlying rises in value. The structure delivers the higher of the performance at maturity and the highest barrier exceeded during the term.

Local Cap The maximum return in each period of a cliquet option that is used to calculate the overall return.

Local Floor The minimum return in each period of a cliquet option that is used to calculate the overall return.

Outperformance option Also known as a Margrabe option. A twofactor option giving the purchaser the right to receive the outperformance of one asset over another asset. For example, a purchaser with a view that the Hang Seng Index (HSI) will outperform the Dow Jones Euro Stoxx 50 (Euro Stoxx) index should buy the outperformance option, which pays notional multiplied by the outperformance of the HSI index over the Euro Stoxx index. In this case, the payout is zero if HSI underperforms Euro Stoxx. The value of an outperformance option will largely be dictated by the historical correlation between the underlyings.

Periodic cap A cap in which the strike rate can vary from period to period. The strike rate in a given period depends upon the strike set in the previous period. Such caps are normally set at a

fixed number of basis points above the previous strike, or the index plus a spread. Periodic caps can be with or without memory. A periodic cap without memory simply looks at the strike in the immediately preceding period to determine a new strike, while one with memory may look at previous settings in determining the new strike. Periodic caps are common features in adjustable rate mortgages (ARMs) in the US where the borrower's floating interest payments cannot go up by more than a set number of basis points in a given year.

Periodic floor A floor in which the strike rate can vary from period to period. The strike rate in a given period depends upon the strike set in the previous period. Such floors are normally set at a fixed number of basis points above the previous strike or the index (for example Libor) plus a spread.

Rainbow option It is an option with the payout linked to two or more underlying instruments or indexes. Some common types of rainbow options are the maximum option, minimum option, best-of option and worst-of option. The underlyings are of the same asset class and can have different expiry dates and strike prices, but for the option to payout, all the underlyings must move in the direction that is favorable to the option holder. However, if the option combines two or more types of asset classes, such as a stock index and an exchange rate, it is called a hybrid option.

Range accrual option An option that pays out a fixed amount at expiration for each day that the index rate remains within the specified range.

Range note A range note, also known as a fairway note, an accrual note, or a corridor floater is a structured note, which pays a coupon for each day that the underlying spot stays within a specified range, sometimes called the accrual corridor. If the underlying trades outside the specified range, the investor receives no interest for that day. The underlying can be a reference interest rate, a foreign exchange rate, an equity price or the spread between two interest rates. The range is determined at the outset to suit the investor's risk/return requirements, but might also be reset by the investor or be automatically centred on the prevailing rate at each reset date. This higher yield is achieved by the investor selling an embedded corridor option, particularly in times of high volatility. The holder of the note will therefore benefit in stable market periods when volatility is low.

Ratchet floater Also called a one-way floating rate note. A ratchet floater is a structured note that pays a floating interest rate indexed on a reference rate such as Libor. Each floating interest rate will depend on the previous interest rate paid.

Rebate Barrier options often have a rebate associated with the trigger level(s).A rebate is an amount paid to the holder of the derivative if the instrument is knocked-out or is never activated during its lifetime as partial recompense for their initial investment. One example is the rebate range binary.

Reverse Cliquet A typical form of cliquet where all negative periodic performances are deducted from the headline coupon to give the coupon level at maturity. Each periodic performance may be subject to a Local Floor.

Straddle The sale or purchase of a put option and a call option, with the same strike price, on the same underlying and with the same expiry. The strike is normally set at-the-money. The purchaser benefits, in return for paying two premiums, if the underlying moves enough either way. It is a way of taking advantage of an expected upturn in volatility. Sellers of straddles

assume unlimited risk but benefit if the underlying does not move. Straddles are primarily trading instruments.

Worst-of option An option whose payout is referenced to one or more of the worst performers in a basket of shares or indexes.